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3 August 1979

USSR Report

RESOURCES

No. 887

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USSR REPORT

RESOURCES

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ELECTRIC POWER AND POWER EQUIPMENT

UZBEKISTAN MAKES PROGRESS IN ENERGY CONSERVATION

Moscow IZVESTIYA in Russian 16 May 79 p 1

[Article by G. Dimov, correspondent: "Counting Every Kilowatt"]

[Text] The electrical energy which is annually saved in Uzbekistan is sufficient to run the Republic's entire food industry. But if even more energy is saved?

Practical experience points to the fact that the beginnings of energy saving is in the very equipment which consumes it.

We walked around the finishing shop at the factory and S. Offengenden, the chief power engineer at Tashkent Textile Combine, directed our attention to the Amdes apparatus:

"It would seem that in an innovation everything in the apparatus would have been thought out down to details. However as happens sometimes with new equipment there are energy wastes in the design. The Amdes is no exception. Having established this fact the workers did not want to tolerate it. The processes of mixing and dyeing were combined and a total of 196,300 kilowatt hours of electrical energy were saved.

S. Koneyev, a worker, J. Rakhmatullayev, a foreman, G. Kubrak, a fitter, V. Vashtenkin, an electrical installation worker, and Sh. Sheraliyev, a chief mechanic, in the second spinning factory gave much time and effort to replacing the BK-40 carding machine with a more improved model. New stretching devices replaced the old ones. Their efforts were paid off a hundredfold: not only were 370,000 kilowatt hours saved, but the output increased considerably.

Workers at the Tashkent Textile Combine focused their searching thoughts on problems of efficiency in the use of thermal energy also. How could condensate recovery be increased? What could be done in order to prevent violations of temperature conditions in hot vats? Are there actually ways of improving insulation on heated surfaces?

There are still no answers to these questions. However, the atmosphere of personal interest on the part of each member of the collective in improving production efficiency and intensifying conservation indicate that the solution to these problems is not too far away. A staff for energy savings is operating at the combine and managers at all shops and services regularly report at its meetings. A "Komsomol Searchlight" and a peoples' control group are actively working. It is no accident that last year energy savings amounted to 2.8 percent of planned consumption. In 1979 the collective at the combine has set itself an even higher goal.

The search for savings at the Lamalyk Chemical Plant is proceeding in similar directions. The director, K. Sadykov, is a deputy to the USSR Supreme Soviet. New and more economical equipment has been installed in shop No 1. Artesian well water used to cool the compressors is now being used for process purposes where very economical cooling sprays are used. The norming of energy consumption at the plant not only covers each element in this process chain, but also municipal-domestic services. All in all last year 6,447,000 kilowatt hours of energy (3.2 percent of the norm consumption) were saved.

Intensifying the degree of savings and mobilizing production reserves to attain higher final results, the Republic's collectives are making their contribution to successfully fulfill the Ninth Five Year Plan.

11,574
CSO: 1822

ELECTRIC POWER AND POWER EQUIPMENT

EFFICIENCY OF DONETS COAL IN THERMAL POWER ENGINEERING ANALYZED

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 1, Jan 79 pp 13-20

[Article by A. Reshetnyak, V. Khizhnyak, candidates of economic science, and A. Tuzman: "Efficiency of Utilization of Donets Coal in Thermal Power Engineering"]

[Text] During the Tenth Five Year Plan improvement of product quality has become one of the main ways of increasing the efficiency of social production. In the report to the CPSU 25th Congress, L. I. Brezhnev indicated "We understand the quality problem in a very wide sense. It covers all facets of economic activity. High quality involves the saving of labor and material resources, the growth in export potentials, and finally the better, more complete satisfaction of society's needs. This is why the entire mechanism of planning and administration, the whole system of material and moral incentives, and the efforts of engineers, designers, and workers' skills should be directed at improving output quality."

As is known, product quality is a measure of its utility, and the degree of satisfying social needs. Improvements in quality with respect to fuel involve increasing its caloric content, reducing costs to the consumer, improving the sociological and economic conditions of fuel utilization, and reducing harmful atmospheric emissions. The extent to which coal quality and its economical nature can be balanced is now the subject of numerous studies. These take into consideration the fact that improving product quality is not a goal in itself, but one of the means of increasing the social productivity of labor. In each specific case the economic indicator of quality is defined as the difference between expenditures in utilizing a product having the same function, but differing quality and additional outlays in the production sphere linked to improvements in product quality.

The quality of extracted coal is determined by many factors, among which natural conditions have a basic place. However, even coal extracted from deposits with similar or identical mining engineering conditions can be

far from equivalent, depending upon the processes and organization of cleaning operations. During the extraction process indicators of coal quality are subject to significant changes. Almost always, but to a differing extent these are harmful ones, thus reducing its value and degree of utility.

During the 1960's a major of mines in the Donets Basin converted to progressive processes and organization of coal extraction using highly productive mine face equipment and conveyors for transporting coal. In the process some reductions in coal quality were consciously permitted, while there were improvements in the economic indicators of coal extraction. In contrast to the extensively used selective extraction of multistrata beds with complex structures, making the coal extraction process more difficult, and leading to increases in costs, miners started to use the method of extracting the entire bed (collective extraction) as well as so called rock mass with increased ash content. This process improved the technical-economic indicators of coal extraction to a considerable degree: the use of coal extraction complexes considerably increased the output at the work base, increased labor productivity, and reduced coal extraction prime cost. However, requirements with respect to the quality of commercial coal began to offset the economies in coal extraction. The solution of this contradiction required considerable expansions in the concentration and enrichment of the extracted material. Over the years the number of mines converted to the new coal extraction process constantly increased. This lead to a substantial growth in the ash content of coal extracted. Table 1 gives data on this for the Donets Basin during 1965-1975.

TABLE 1

Grade of Coal	Ash Content %			
	1965	1970	1973	1975
D	27.2	30.4	32.7	32.7
G	21.9	27.9	30.8	31.3
Zh	24.9	28.8	30.9	30.9
K	22.8	25.4	28.7	29.2
OS	19.1	27.6	29.2	29.7
T	20.4	22.9	24.7	25.3
A	19.9	24.9	28.3	28.8
Total	22.5	26.9	29.5	29.9

As can be seen from the data on Table 1, for the Donets Basin as a whole the ash content of extracted coal increased by 7.4%. For some mines the growth in ash content was even higher.

The problem of improving coal quality led to the development of mechanized concentration. This has become an independent production sector within the coal industry system with respect to its scale and significance. Coal concentration operations are completely formed technically and economically and have specified tendencies and development prospects. Annual weight reductions due to above norm rock content in extracted material amount up to 20 million tons. Forecast data from the TSNIEIugol' indicate that this tendency will continue in the future due to the further mechanization of coal extraction, the working of beds with complex structures and the growth in the use of conveyors for underground transportation.[1] This leads to even greater depletion of extracted materials. The advisibility of these technological features is due to the economic advantages resulting from a high degree of mechanization of mine face operations and transportation at coal enterprises. Some deterioration of coal quality is consciously allowed so that at later stages of concentration its initial properties can be restored.

However, as indicated by analysis of concentration factory operations, coal with the highest ash content is not always subject to concentration. There are known instances where the raw material source for the factory includes coal with a 19-24 percent ash content, while at the same time coal from mine No 10, the Glubokaya in the Donetskugol' Production Association with an ash content of up to 44 percent is sent, without concentration to thermal electric power stations. These are not the only such cases. In such cases there are sizable reductions in the value of the coal industry's commercial output, since in accordance with the wholesale price list for coal and concentration products, a 1 percent increase in ash content reduces price by 3 percent. At the same time the combustion of fuel with a high content of inert materials, and which is contaminated by large chunks of rocks enters the operation of the entire dust tramping system at thermal electric power stations and leads to a growth in the costs of electrical energy production. In this regard it is fitting to note that in France, where the mining geological conditions of the main coal basins are similar to those in the Donbass, preference is given to the extraction of material with an ash content of up to 60 percent with obligatory subsequent enrichment.

The economic value of coal enrichment changes, depending upon many factors, the most important of which are the areas that are using various types and grades of coal and the rational limits of concentration since the economic efficiency of the process depends first of all upon these. The highest efficiency is attained by concentrating coking coal, since the removal of rock at the fuel preparation stage results in sizable economies in coke and by-product production operations and in the blast furnace process. Comparatively little attention is given to problems in the economic efficiency of concentrating coal for power engineering uses, in particular that used as the basic type of fuel at block type thermal electric stations.

Thermal power engineering is now one of the main consumers of coal for power engineering purposes. The use of coal for railroad transportation has almost completely stopped since the conversion to diesel and electric types of traction. Because of the expanded use of gas from pipeline systems and liquified gas, and the frequent use of electrical and thermal energy, the use of coal in the municipal-domestic sector has stabilized. According to studies by Energoset'proyekt [Energy Network Planning], by 1985 power engineering grades and varieties of coal will be almost completely consumed at thermal electric power stations and thermal electric central stations. Because of this it has now become necessary to develop a methodology for the economically justified efficiency of concentrating coals used in thermal power engineering.

It is essential to note that in the next 10-15 years the basic power installation at thermal electric stations will be 800 MW capacity blocks. It is planned to achieve the entire growth in electrical energy production through introducing such blocks, a sizable share of which will operate on solid fuel. Compared to the 300 MW blocks, the most widespread at present, each newly introduced 800 MW block will save 1.2 million rubles of capital investments in thermal power engineering, reduce the number of service personnel by 150, and annually save more than 36,000 tons of standard fuel. However, such large capacity units are more sensitive to fuel quality characteristics. Studies have shown that an increase in the amount of inert material in coal (ash and moisture) hurts the basic technical-economic indicators of energy block operation. A sharp drop in the coefficient of useful activity, an increase in the consumption of standard fuel and deterioration of other very important characteristics of these units takes place at ash content higher than 25-27 percent, that is with in the quality range of most of the fuel delivered to electric stations. Because of this the significance of coal concentration as a basic factor for improving the efficiency of fuel utilization rose considerably.

Lack of attention to the problem of concentrating coal for power production can be explained by the fact that prior to the conversion to the process of extracting coal which contains rock, its ash content was comparatively low and corresponded to consumption standard norms. In addition, the methodologies of earlier studies on the economic advisability of concentrating coal for power production only took a limited number of factors into consideration: the influence of coal ash content on the kpd [coefficient of useful activity] of boiler units and transportation expenditures involving the delivery of coal to the site of consumption. As a result the opinion developed that the concentration of coal intended for pulverized combustion at thermal electric stations having high capacity blocks was inefficient.

Research at Teploelektroproyekt [Thermal Electric Planning] VTI imeni F. E. Dzerzhinskiy [All Union Institute of Heat Engineering imeni F. E. Dzerzhinskiy] and at other institutes established that the influence of ash content on

the technical-economic indicators of fuel utilization was not limited to these factors. In addition to effecting the kpd the ash content of the coal burned has a substantial influence on the unit fuel consumption, electrical energy production prime costs, boiler capacity utilization time, electrical energy consumption for the facility's own needs, and other characteristics. These studies also established a quantitative relationship for evaluating all factors. This permitted a re-examination of the approach to estimating the economic efficiency of concentrating coal to be burned in a pulverized form.

An analysis of the operation of concentrating facilities for power engineering purposes established that the concentration process leads, as a rule, to two final products - concentrate and rock. The ash content of the concentrate has not been subject to economic advisability studies and is at the 11-12 percent level. In 1975 the ash content of tailings rock at facilities for concentrating power production coal was 71.3 percent. These indicators were even lower for some enterprises: at the Krasnaya Zvezda it was 61.7 percent, at the Pioner - 60.0 percent, at the Kremennaya - 62.4 percent, and at the Tsentral'naya No 1 61.7 percent. Such low indicators point to the low degree of rock extraction from the useful product and, as a result considerable coal losses at production operations' tailings. The specific nature of the concentration process is such that an increase in rock ash content automatically entails an increase in the content of mineral additives in the concentrate also. During the concentration of coking coal in order to obtain quality standardized (according to expert evaluation an ash content of 7.0-7.5 percent) concentrate and high ash rock, an intermediate product is removed. This is used as boiler fuel. This process results in two products of the necessary quality. There is no such possibility of this during the two product concentration system. Therefore the production of low ash content concentrate involves planned losses of coal fractions in tailings piles, leading to underutilization of the fuel available in extracted coal.

The coal research carried out at the Institute of the Ukrainian SSR Academy of Sciences was the solution of two problems: determination of, under contemporary conditions, the economic efficiency of concentrating coal intended for combusion in pulverized form at 300, 500, and 800 MW energy blocks; establish the optimal ash content, i.e. that at which there are minimum outlays in adjacent industrial sectors - coal, thermal power engineering and transportation.

In this case the economic, the optimal ash content in the concentrate involves changes in positive and negative factors of concentration efficiency. As the problem involves coal used to produce electrical energy, the calculations of concentration efficiency were made for 1 kilowatt hour, the total costs for the production of which are determined by the degree of ash content. The prime cost for obtaining a unit of electrical energy burning unconcentrated (from the mine) coal independently of the extent to which it is suited for direct consumption was taken as a constant initial value from which to begin comparisons.

Based on this the total outlays for the production of one kilowatt hour of electrical energy are expressed by the formula

$$Tc = \frac{C_{con} + C_{tr} + C_{comb}}{Q} \text{ rub./kwhr}$$

Where: Tc - total costs; C_{con} - prime cost of concentrating ton of coal, rubles per ton; C_{tr} - unit transportation costs, rubles per ton; C_{comb} - prime cost of combustion of 1 ton of coal, rubles per ton; Q - quantity of electrical energy produced.

In its expanded form the economic model is as follows

$$Tc = \frac{\left(C_{con} + C_{tr} + \frac{C_{comb} \cdot 10}{C_{st.f.}}\right) Q_{CSF} \cdot C_{St}}{\left[\left(Q_L^g \frac{100 - A(1-0.01W) - W}{100} - \sigma W\right) Ou_{con} E_b Lf.\right] (1-C_1) E_t}$$

given under the conditions

$$C_i = R_i + q_i A + x\eta i A^2; \quad i = 1,2,3,4,5,6;$$

$$Ou_{con} = R_3 = \sqrt{q_3 + \eta_3 A}; \qquad 0 < A < A_{r.o.m.}$$

Where: C_1 - comsumption of electrical energy for the station's own needs; C_2 - Lf. load factor of boiler utilization, portional units; C_3 - Ou_{con} - output of concentrate, portional units; C_4 - E_b - Efficiency factor of boiler unit, portional units; C_5 - $C_{st.f.}$ - Consumption of standard fuel per kilowatt hour of electrical energy produced, grams of standard fuel per kwhr; Q_{CSF} - caloric content of standard fuel Kcal/KG; Q_L^g - low heat of combustion in standard mass for a given grade of coal, kilocalories per kg.; A - ash content of burned coal in working mass, percent; $A_{r.o.m.}$ - ash content of run of mine coal arriving for concentration; W - average water content in coal, percent; E_t - caloric equivalent

The dependence of C_i on the ash content of the coal burned is determined by the method of least squares using research data from VTI imeni F. E. Dzerzhinskiy, ORGRES [State Trust for the Organization and Rationalization of Regional Electric Power Plants and Networks and Their Departments]. The dependence of concentrate output (Ou_{con}) was determined for each concentrating facility based on data from the fractional analysis of the coal actually arriving for concentration. This permits a specific calculation with consideration given to the raw material base available to the concentrating facility. The range of variation in ash content covers all

concentration variants; from the theoretically possible extraction of non-ash mass to the variant for utilizing run-of-the-mill coal without preliminary concentration.

The difficulty of a numerical analysis of this mathematical economic model involves the rational fraction nature of the target function relative to the desired parameter. In order to obtain the optimal concentrate ash content in the face of the target function's unimodality, the golden section method was used, and if the function was polymodal, the method of partitioning an uneven interval was used.

Practical testing of this research was repeatedly conducted for existing and planned concentration facilities. As a result it was established that the economic efficiency of concentrating coal used as the basic fuel at electric power stations is attained when rock extraction is not less than 80 percent. Technically this is implemented by increasing the demarcation consistency of separation. This involves no additional capital expenditures and no increased operating costs. The optimal magnitude of concentrate ash content is in all cases 2-4 percent higher than the actual quality levels of commercial output at concentrating facilities now in operation. What is more, the optimum ash content is not the same at different concentration operations, and in addition these factors depend upon the ash content of the coal supplied. As a result of this optimization it is possible to obtain additional fuel resources through including the average consistency fractions and increasing concentrate output. The calorie content of the middle coal fractions is around 2,000-2,700 kilocalories per kilogram. The amount of additional commercial fuel resources was determined in a work by the Tsentrogiproshakt[2] carried out in accordance with USSR Gosplan and USSR Ministry of the Coal Industry. The Institute of Industrial Economics at the Ukrainian SSR Academy of Sciences participated in the determination of the optimal ash content of coal delivered to electric power stations. Table 2 shows the results of studies on obtaining additional fuel resources with a fixed volume of coal processing at concentration facilities of the USSR Ministry of the Coal Industry.

Thus, without increasing coal extraction, through the rational organization of the concentration process one can obtain an additional 400,000-500,000 tons of coal annually. One should note that studies of additional fuel resources are made for a separation density of up to .0 kg-cubic decimeters, which in a number of cases is lower than the obtained optimum (an average of 2.15 kilograms per cubic decimeter). This is due to the fact that the separation of initial coal at such density corresponds to the technical potential of washing units, the basic type of equipment for concentrating small classes of coal 0.5(1)-13 mm. This fact gives rise to one of the problems in the long term development of coal concentration - the stabilization of operating conditions of the basic equipment at higher values of separation density.

Table 2

Таблица 2

1 Показатели	2 Единица измерения	1977 г.		1980 г.	
		3 при плотности разделения, кг/дм³			
		actual δ факт.	δ–2,0	actual δ факт.	δ–2,0
4 Количество товарного угля	тыс. т	7573	8000	9699	10 231
5 Зольность товарного угля A^c	%	12,9	15,5	12,2	14,5
6 Удельный расход натурального топлива на 1 отпущенный квтч электроэнергии	г	385	397	382	392
7 Количество отпущенной электроэнергии	млн. квтч	19 680	20 140	25 390	26 100
8 Разница по сравнению с максимальным отпуском электроэнергии	—»	460	—	710	—
9 Сумма реализации от отпуска дополнительного количества электроэнергии	млн. руб.	—	+3,0	—	+4,8
10 Стоимость сжигания угля (без топливной составляющей) на получение:					
10a а) 1 квтч электроэнергии	коп.	0,188	0,190	0,188	0,190
10b б) всего количества электроэнергии	млн. руб.	37,0	38,3	47,7	49,6
11 Эксплуатационные расходы на получение разницы в электроэнергии:					
11a а) на 1 квтч электроэнергии	коп.	0,496	—	0,496	—
11b б) всего количества электроэнергии	млн. руб.	2,3	—	3,5	—
12 Суммарные эксплуатационные расходы на получение равного количества электроэнергии	млн. руб.	39,3	38,3	51,2	49,6
13 Экономия на эксплуатационных затратах	млн. руб.	—	1,0	—	1,6

Key:

1. Indicator
2. Unit of Measure
3. At Separation Density
4. Quantity of commercial coal -------- thousand tons
5. Ash content of commercial coal A^c --- percent
6. Unit consumption of standard fuel -- grams per 1 kilowatt hour of electrical energy produced
7. Quantity of electrical energy produced ---------- million kilowatt hours
8. Difference in comparison to maximum output of electrical energy -------- million kilowatt hours
9. Total sales from output of additional quantity of electrical energy ---------- million rubles
10. Cost of coal combustion (without fuel component) to obtain:
    10a) 1 kwhr of electrical energy --- kopecks
    10b) total production of electrical energy ---------- million rubles

[Key to Table 2 continued]

11. Operating costs to obtain the difference of/in electrical energy
    - 11a) 1 kwhr of electrical energy ---------- kopecks
    - 11b) total electrical energy ---------- million rubles
12. Total operating costs to obtain an equal amount of electrical energy ---------- million rubles
13. Savings in operational outlays ---------- million rubles

The mastery of technology for concentrating anthracite coal dusts is another important task. At the present time small classes of anthracite (0-6 mm) are enriched at two factories - Krasnaya Zvezda and the Komendantskaya, the concentrates of which have an ash content of 16-18 percent and are used for special purposes. At the same time thermal electric stations in Ukrainian SSR are annually burning about 2 million tons of unconcentrated anthracite dusts. The quality of this coal, which now amounts to 37 percent of all Donets coal resources, is annually deteriorating with regard to ash content and moisture content. The combustion of high ash anthracite dusts was a result of the overconsumption of scarce Mazut fuel amounting to 1.5 million tons in 1976. According to data from the Ukrainian SSR Ministry of Power and Electrification, the caloric equivalent of anthracite dusts was reduced to 0.675 in 1975, which is only somewhat higher than anthracite intermediate product (0.626). Due to the increased content of mineral impurities the increased cost of fuel consumption at thermal electric stations amounted to more than 11 million rubles.

The operation of large power production installations using Donets coal with the high impurity content has caused increases in harmful emissions and pollution of the air sheds with products of incomplete combustion, oxides of nitrogen and sulphur, and volatile ash. In 1975 electrical power stations of the Ukrainian SSR Ministry of Power and Electrification were responsible for almost 2.6 million tons of ash and moisture because of the increased ash and moisture content of coal processed at pulverizing installations and discharged into ash heaps and the atmosphere. This resulted in a sharp deterioration of environmental conditions and inflicted irreparable damage upon peoples' health.

Methods for removing moisture from coal therefore become very important. With comparatively low capital investments they would substantially reduce the volume of combustion products and their content of harmful substances. Thus, increasing the efficiency of fuel utilization is inseparably linked to another major problem - protecting the environment, and first of all air sheds, from pollution by-products of combustion and harmful emissions.[3] All this places into the forefront, the problem of mastering the concentration of small class coals, including anthracite dusts. The experience in concentrating sharply depleted coals is important in this regard. This has

been acquired at the Chelyabinsk Coal Basin, where coal with an ash content of 50-60 percent and even higher is concentrated, and the ash content of concentrate is within the 25-30 percent range and profit amounts to 6-7 rubles per ton of commercial output.[4] In some cases concentrating installations are used to process the wastes of concentrating plants using the pneumatic method of concentration. These wastes contain 7-8 percent coal. Good results were also obtained in concentrating small classes, 3-6 mm and 0-3 mm. With an initial coal ash content of 46.5 percent the indicators of concentrate and rock quality amounted to 28 percent and 78 percent respectively. This experience should be utilized in developing technological systems for concentrating and for developing equipment to do this in the Donbass.

Thus, the research conducted has determined the conditions producing an economic effect in concentrating coal for power production purposes and possibilities of maximizing this effect: obtaining additional fuel resources at the same extraction level; providing electrical power stations with blended (completely or partially) fuel; creating conditions for the improvement of the ecological situation in the Donetsk industrial region and localities of fuel use.

FOOTNOTES

1. TSNIEIugol' Nauchnyye trudy, Sbornik No 1 (Scientific Works Handbook No 1), Moscow, 1973.

2. "Technical Economic Basis for the Specialization of Concentration Factories in the Donbass and the Optimal Ash Content of Coals, Delivered to Large Electric Power Stations of the USSR Ministry of Power and Electrification during 1976-1980, Vol 1," Tsentrogiprozhakht, Moscow, 1976.

3. M. B. Ravich, "Effektivnost ispol'sovaniya topliva" [Efficiency of Fuel Utilization], Moscow, Nauka, 1977.

4. V. A. Kinareyevskiy, E. V. Miller, et. al., "On the Problem of Concentrating Depleted Materials Extracted from Open Pit Mines," UGOL', No 3, 1976, pp 71-73.

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ELECTRIC POWER AND POWER EQUIPMENT

BRIEFS

ARKAGALA-YAGODNOYE POWER LINE--The 220-kilovolt electric power transmission line, linking the Arkagala GRES with Yagodnoye Settlement has been put under load. The 180-kilometer power line will supply power to Yagodninskiy, Susumanskiy and Srednekanskiy rayons, which until now have been connected to a LEP-110 power line. [Vladivostok Maritime Service in Russian to the Pacific Far East 0710 GMT 22 May 79]

CSO: 1822

ENERGY CONSERVATION

PEOPLE'S CONTROL WORK IN LENINSKIY RAYON

Baku VYSHKA in Russian 26 Jun 79 p 2

/Article by A. Grigor'yev: "Intensify the Policy of Economy"/

/Text/ The question of the initiative of the scouts of the Leninneft' NGDU /Petroleum and Gas Production Administration/, who joined in the review of economy and thrift under the motto "The Policy of Economy Is a Socialist Method of Management," was examined at the recently held conference of the aktiv of the People's Control workers of Leninskiy Rayon.

The oil workers of the Leninneft' NGDU, as was pointed out at the conference, are doing much work on saving material and energy resources. In 1978, for example, by means of the efficient use of production reserves and the intensification of the policy of economy the production cost of the commodity production was decreased here by 1.2 percent, 3,552,0000 kWh of electric power and 3,156,000 m^3 of compressed air were saved.

The People's Control workers of the petroleum and gas production administration are responding by deed to the decree of the CPSU Central Committee and the USSR Council of Ministers, "On Providing the National Economy and the Population With Fuel, Electric and Thermal Power During the 1979-80 Autumn-Winter Period."

In the speeches at the conference there was also stressed the need, as is required by the materials of the All-Union Applied Science Conference "The Formation of an Active Position in Life: The Experience and Pressing Problems of Moral Education," to take more extensively into account the moral aspects in resolving the set of problems of economic and cultural construction and the inclusion of moral criteria in the evaluation of the work of the People's Control workers.

The conference recommended that the initiative of the People's Control workers of the Leninneft' NGDU be widely supported at all enterprises and organizations of the rayon.

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CSO: 1822

ENERGY CONSERVATION

GAS WASTED AT AZERBAIJAN BAKERIES

Baku VYSHKA in Russian 26 Jun 79 p 2

/Article by N. Kuliyev, chief of the Azerbaijan Territorial Inspectorate of the USSR State Gas Inspectorate: "This Is Wastefulness!"/

/Text/ You do not have to be a specialist in bread baking to say why bread winds up on the counters burnt or underbaked. It is the result of the uneven supply of gas during baking.

The Gluttonous Jinni Drawing by V. Tatatintsev

Let us go to Bakery No 6, to the shop where national types of bread are made. A superficial examination shows that the top gas jets of the oven are unsuitable for use. This, on the one hand, leads to the overconsumption of gas. On the other, to the burning of goods.

Such a situation should have been corrected quickly. However, the shop foreman on his personal initiative damped with an asbestos sheet the special device which whould ensure the normal combustion of gas. And thereby he made worse the baking conditions, which were not normal as it was.

Such "initiative" not only deprived this type of bread of its characteristic smell and taste, but also led to considerable wastage. Meanwhile the plant management is not taking steps to eliminate the technical deficiencies. Chief engineer I. Azizov merely stretched out his arms in response to our observations.

It should be said that the plant management is implementing the recommendations of our inspectorate, so to speak, by the method of contraries. Thus, back in 1977 it was recommended to the plant to replace the uneconomical gas jet devices. They did replace them, and by ones that are just as uneconomical. Moreover, they installed jets which consume twice (!) as much gas.

The situation is even worse at Bakery No 5. Here there is no recording of the consumption of gas at all. As a result this enterprise, which has only 10 gas-burning units, consumed in 1977 and 1978 respectively 7 and 8 million m^3 of gas. And this is at a time when, for example, the large Bakinskiy rabochiy Machine Building Plant, which in just one stamping shop has 11 heating furnaces which are incomparably more powerful in their productivity, annually consumes only 6-7 million m^3.

In spite of the repeated warnings of our inspectorate, at Bakery No 5 the people responsible for the consumption of gas have so far not been able to provide standard and accounting data which would reflect the specific and actual rates of consumption of fuel. These documents are not compiled at the bakery at all.

As a result, the baking of those national types of bread here is carried out under even worse conditions than at Bakery No 2. Enterprise director Ya. Babayev and chief engineer Sabir Ruf ogly were not able to explain why of the three ovens installed in the shop one was completely inoperable, while in the two others the lower jets do not burn.

Such a violation, as the workers said, in half a shift leads to wastage in the amount of a hopper for preparing dough.

All this cannot but cause astonishment, for there is located here under the same roof the Baku section of the Transcaucasian Start-Up and Adjustment Administration of the Orgpishcheprom Trust, which has been entrusted with the function of performing adjustment operations. We were interested in

finding out from the management of the section, why the latter was not helping the plant. It was explained that no one had appealed for help, although the section, if necessary, could request the services of highly skilled specialists from other cities.

Summarizing these facts and noting that we encountered approximately the same situation at other Baku bakeries, a serious reproach should be issued to the management of the Azkhlebprom Association and these enterprises. The registration of the use of gas, which has been let drift, here led last year alone to the nonproductive consumption of 10 million m^3 of allocated gas in the amount of 200,000 rubles.

Having taken advantage of the fact that, according to a government decision, it is not allowed to impose penalty sanctions on enterprises of the bread baking industry for the above-limit consumption of gas, these managers released themselves from all work on increasing the efficiency of the use of natural gas.

It is also worth speaking about the formalism in compiling the report itself. Here is a typical example: Bakery No 3 compiled two reports on the use of fuel last year. In one, for the republic Main Administration of the Gas Industry, it indicated an annual consumption of 3,989,000 m^3, in the other, for its association, 5.2 million m^3. And this is with a plan of 2.15 million m^3!? It is impossible to say which figure is correct, for there are no instruments at the plant for registering and monitoring the consumption of gas and heat.

A check of the enterprises of Azkhlebprom also revealed such a serious deficiency as the lack at them, with the exception of the baking yeast combine, of measuring equipment. The temperature in the ovens is determined by touch.

Beginning in 1975, with each study we have made suggestions for putting things in the proper order and have drawn to this the earnest attention of both the Azkhlebprom Association and the republic Ministry of the Food Industry. However, to this day the proper steps have not been taken!

> From the editorial board: As is evident from the published article, a great overconsumption of scarce natural gas is being allowed at practically all the enterprises of the Azkhlebprom Association of the Ministry of the Food Industry.
>
> Everything indicates that their managers are not devoting the proper attention to the rational use of fuel and to the solution of questions, the importance of which was especially emphasized at the November (1978) CC CPSU Plenum and in the CC CPSU decree, "On Providing the National Economy and the Population With Fuel, Electric and Thermal Power During the 1979/80 Autumn-Winter Period." The posts

and groups of the People's Control, as the facts attest, are poorly fulfilling their important function here. Their immediate and urgent duty is to radical change the attitude toward the matter, to wage a resolute campaign against the wasteful attitude toward fuel and to make strictly accountable the officials who are guilty of the wasteful consumption of fuel and power resources, as the decree requires!

7807
CSO: 1822

ENERGY CONSERVATION

PREPARATIONS FOR AUTUMN, WINTER IN AZERBAIJAN

Baku VYSHKA in Russian 22 Jun 79 p 3

/Interview with K. N. Gorskiy, chief of the Main Administration for Exploitation of Power Systems in the South of the USSR Ministry of Power and Electrification by an AZERINFORM correspondent: "The Power Workers Are Checking the Readiness"/

/Text/ Questions of the effective preparation for the autumn and winter of 1979-1980 and the assurance of the reliable power supply of the national economy of the country during this period were discussed at the conference, which has concluded in Baku, of the workers of the power systems of the RSFSR, which belong to the Main Administration for Exploitation of Power Systems in the South, as well as the republics of Transcaucasia and Moldavia.

An AZERINFORM correspondent asked K. N. Gorskiy, chief of the Main Administration for Exploitation of Power Systems in the South of the USSR Ministry of Power and Electrification, to comment on the problems discussed at it.

/Answer/ "They are specified," he related, "by the decree of the CC CPSU and the USSR Council of Ministers, 'On Providing the National Economy and the Population With Fuel, Electric and Thermal Power During the 1979/80 Autumn-Winter Period.'

"In order to successfully solve the tasks set by the party and the government, it is necessary to carry out diverse preparatory work. It includes the timely repair of equipment, the increase of the reliability of operation of electric power transmission lines and the accumulation of reserves of fuel and water resources.

"On this level what do the power workers of Azerbaijan have to do? It is necessary to take immediate steps on storing and accumulation water in the Mingechaur reservoir, since with the anticipated shortage in the autumn and winter of organic fuel the Mingechaurskaya GES should provide substantial

assistance in covering it. So far the filling of the reservoir has been proceeding extremely slowly. By 1 July the probable water level will be 6 m lower than the planned level, which corresponds to the undergeneration of 400 million kWh of electric power. So it is necessary to establish the strictest policy of economy of water at the hydroelectric power station.

"Much in the successful operation of the power system of Azerbaijan will depend on the high-quality repair of the equipment at the Ali-Bayramlinskaya GRES, the Severnaya GRES, the Sumgaitskaya TETs-1 and other power facilities. I would like to note that a good pace of the repair drive has been set at the Azerbaijan Main Power Supply Administration, and it must be maintained without fail.

"It can be hoped that the power workers of Azerbaijan, who have always coped with the fulfillment of important state assignments, will do everything to prepare effectively for the autumn-winter season. In the republic there are such leading collectives as the Ali-Bayramlinskaya GRES and the Severnaya GRES, which enjoy deserved prestige in the country. The other power enterprises should emulate them. The extensive dissemination of advanced know-how will make it possible to fulfill honorably the responsible tasks specified by the decree of the CC CPSU and the USSR Council of Ministers."

7807
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ENERGY CONSERVATION

COAL INDUSTRY DEVELOPMENT

Minsk SOVETSKAYA BELORUSSIYA in Russian 24 Jun 79 p 2

/Article: "The Doors of the Fuel Stores"/

/Text/ In all the industrial countries of the world, including the Soviet Union, the consumption of petroleum and natural gas is increasing sharply. Meanwhile it is commonly known that the reserves of "black gold" and "blue fuel" in the underground stores are not being replenished. That is why scientists and production workers are devoting close attention to the solution of the pressing problems of the fuel and power base, which involve the most rational use of natural resources.

This was discussed at the session of the section of the geology of coal, fuel shale and peat of the scientific and technical council of the USSR Ministry of Geology, which was held in Soligorsk.

Its participants--specialists of the USSR ministries of geology and the coal industry, workers of planning organs and scientists--noted that in our country there are enormous reserves of lignite and long-flame coal, on the basis of which it is possible to organize the production of high-energy fuel.

They are also present on the territory of Belorussia. For example, in the western part of Gomel'skaya Oblast the proven reserves of lignites exceed 100 million tons. This is a large store of power and household fuel and raw materials for the production of various types of products. In all according to the data of geologists the republic holds in its depths about 1 5 billion tons of these resources. Moreover, half of them lie at depths w ich are accessible to open-pit mining.

the session recommendations were drafted and adopted, the fulfillment of which will ensure the further development of the coal industry both in the European part of the country and in Kazakhstan, Central Asia, Siberia and the Far East.

7807
CSO: 1822

FISHERIES

FISHING AND FISH FACTORIES ON KAMCHATKA DESCRIBED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 7 Apr 79 p 2

[Article by V. Biryukov, Secretary, Kamchatskaya Oblast CPSU Committee, Petropavlovsk-Kamchatskiy: "Fishing Bases: Siberia and the Far East"]

[Text] Kamchatka is not for nothing called the nation's fish shop. Its fishermen account for a large part of the all-Union catches of fish and seafood.

The task facing them is that of increasing capacity utilization and achieving major improvements in qualitative indexes of performance. In the first 3 years of the five-year-plan period much has been accomplished. The fishing fleet has been complemented with more modern vessels. New fishing implements and modern searching gear are being introduced. This has resulted in expanding the traditional fishing regions and developing new regions. Our expeditions fish in many zones of the World Ocean, with off-site processing of catches in the shops of floating factory ships, refrigerator ships, and fish-freezing trawlers. Many ships have installed additional curing and canning lines.

Major changes have also occurred at shore enterprises. In the recent past they used to be chiefly seasonal fish plants. Owing to the development of canning operations we succeeded in completely eliminating seasonal work at most shore enterprises as well as in broadening the variety of products being canned, while modernization served to nearly double the volume of output in the same area without hiring extra workers. At the fish plants new canning shops have been built and old ones have been modernized and expanded. All this resulted in increasing the output of edible fish products by 40 percent and raising the output of canned products to the extent planned for the last year of the Five-Year Plan.

In view of the shortage of tare for the canning branch, the oblast party committee posed to the collective of the Petropavlovsk Canning Tins Factory the task of modernizing the enterprise without halting production. There, obsolete equipment was replaced with continuous-flow automatic lines, new shops were built and the wharves were expanded. Now the collective completely satisfied Kamchatka's demand for canning tins and supplies a considerable part of its output to neighboring oblasts.

But far from all has been accomplished. What is more, certain indexes showed a declining trend. Thus, e.g., each year the fish catch plan is underfulfilled. The average catch in nearly every type of ship has declined compared with 1975. Why?

Of course, this has chiefly been influenced by the changes in global fishing. However, it would be incorrect to justify the existing situation by this explanation alone. Last year the waste of work time on fishing ships amounted to 9,000 ship-hours. This means that nearly the entire fleet of Kamchatka's fishing industry was idle for a month. This is due to shortcomings in the management of expeditions, in supply, and also to lack of discipline among individual crew chiefs. But still the principal cause of the waste lies elsewhere.

The fish industry is an intricate economic organism. The efficient utilization of its working capital, which largely consists of its ships, largely depends on the degree of sophistication of its auxiliary services such as shipyards, ports and bases--in a word, all that is customarily termed shore enterprises. A broad gap has arisen between the growth rates of the extracting and processing fleet on the one hand, and between the fleet and the shore enterprises on the other. This is what has led to disproportions.

Let me cite several instances. The ships of the Kamchatrypbrom Association last year lost more than 3,000 ship-hours while awaiting the transloading of finished products and catches. Since the beginning of the five-year-plan period the demurrage of ships in ports has increased by 15 percent, and on the sea by 16 percent, and while awaiting resupply--by a factor of 6! In the final analysis, fishing ships actually were fishing only one-third of the calendar time.

The ship-repair enterprises are developing slowly. Thus, in 3 years the productive capital of that branch increased by only 11 percent, while the demand increased 13 percent. During the same period 240 ships were detained for repair in excess of the time quotas, which is much more than during the entire Ninth Five-Year Plan period. Daily productivity in ship repair continues to decline, which results in prolonging the demurrage of seiners and trawlers at plant wharves.

The increase in demurrage is also due to the lack of a servicing base. The USSR Ministry of the Fish Industry has now been postponing for many years the start of the construction of that base.

All this indicates that at present the quantitative growth of the fishing fleet does not assure an increase in catches and a more efficient performance of the branch. In our opinion, it would make sense to allocate part of the funds to reinforcing the "fishing rear," that is to developing on-shore service enterprises so as to reduce ship demurrage to a minimum. In view of the complexity of the work of a fisherman in the sea, everything should be done on shore to increase his labor productivity.

Further improvements also are needed in fleet structure. The oblast's fish industry at present is incapable of handling all the catches brought in by kolkhoz fishermen and the crews of the state-owned sector. Kamchatka fishermen have to wait a long time before transloading their catches owing to the shortage of warehousing facilities, and they cannot effectively utilize fishing time. This precisely is where considerable potential for increasing catches is latent. In our opinion, shipbuilders should pay more attention to building factory ships, these precisely being the type of ships most needed by Kamchatka's fish industry.

The transport ships of the expeditions are inadequate. The losses of time by fishing ships while waiting for transloading finished products on sea continue to increase. The Ministry of the Merchant Marine does not satisfy the needs of the fishermen. Clearly, the enterprises of the fish branch should develop their own dry-cargo fleet and consider it not as a transport fleet but as a technological fleet serving the operations of the expeditions and having the task of striving to improve the indexes of the fishing and factory ships rather than its own economic indexes.

A further increase in management efficiency is directly tied to the solution of important social problems and particularly the problem of personnel. In the past that problem used to be solved in a simple manner by transporting as many as 30,000 workers to Kamchatka during the summer fishing season. Now, as is known, the nation lacks such manpower reserves. And besides the organization of year-round work on sea and in many shore enterprises requires permanent personnel.

Our rugged and beautiful region attracts not only tourists. Kamchatka is visited by many graduates of higher schools and technicums who simply want to work at sea. Some of them remain long on the peninsula, while others depart after working for a year or two. One reason for the rapid personnel turnover in the fish industry is the acute shortage of housing, kindergartens and ultural and communal institutions. Despite the rapid expansion of the fleet and the increase in the numbers of personnel, the allocations for the construction of worker housing remain unchanged.

At the cost of considerable effort by local organs, a system for the training of rank-and-file and commanding personnel for the fish industry is being developed. A marine technical trade school, a marine nautical school, and the affiliate of the Dal'rybtuz Far Eastern Technical Institute of Fish and Fishery have been opened and are successfully operating. But these institutions supply only part of the demand for skilled personnel. Plans exist for expanding the nautical school and converting the Dal'rybtuz Affiliate to an autonomous institute. The Ministry of the Fish Industry accepts our proposals but so far no practical assistance has been provided in reinforcing the facilities and resources of the base.

The development of the network of educational institutions is geared to the fact that nearly all of their graduates keep working at the oblast's enterprises and industry. By contrast, specialists in the same fields assigned here from higher schools and technicums in the central regions generally leave our region after 3 years, with few exceptions.

The oblast party committee believes that the Ministry of the Fish Industry and the planning agencies should listen to our proposals and consider them when drafting annual and long-range plans.

Yes, construction on Kamchatka is difficult and expensive, and so is the maintenance of industry and educational institutions here. But such expenditures are needed so that the colonization of the region can be extended.

1386
CSO: 1822

COMPREHENSIVE SOLAR ENERGY DEVELOPMENT PROGRAM REVIEWED

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 May 79 p 3

[Article by R. Lynev, science observer: "The Sun and the Wind"]

[Text] The USSR State Committee for Science and Technology, in its division of power and electrical engineering, has a comprehensive five-year program to master solar energy. Among the participants in the program are the collectives of the divisions and laboratories at the Energy Institute imeni G. M. Krzhizhanovskiy (the chief scientific institution of the USSR Ministry of Power and Electrification),All-Union Scientific Research Institute of Light Alloys, the Leningrad Physicotechnical Institute, the Physicotechnical Institute of the Academy of Sciences of Uzbekistan, and the science centers of the Ukraine and Moldavia. The Institute of Physics of the Sun, which was recently opened in Ashkhabad, is also participating in the program.

What does this program envision? For one, it calls for construction of an experimental hotel with solar water heating in Simferopol'. There is such a hotel. Its transparent roof is in essence a flat water boiler in which water is heated and then goes to storage, taps, and showers. The hotel differs from neighboring structures not only by its unusual roof, but also by the fact that it has no stacks and no smoke over it. This is a graphic demonstration of how to save the Crimean skies and air from excess contamination.

But the Crimean hotel is far from unique. This water heating principle is not feasible in the South alone; there is a Pioneer camp in suburban Moscow which uses "solar" water. And the vast regions beyond the Urals have many more hot, sunny days than the Moscow region.

But the program devotes its primary attention to harnessing the energy of the sun in Central Asia, in particular Uzbekistan and Turkmenistan. The division of solar physics at the Physics-Technical Institute of the Academy of Sciences Uzbekistan has a large part within the program. Solar installations of various designs and for various purposes may be seen at the institute's testing grounds. They have water heaters there which have already been put in series production in our country.

Operating a home with roof water heating is cheaper in Uzbekistan than the conventional method that distributes water from a central heating plant. At the same testing ground is a solar kitchen. Its aluminum foil reflectors create a solar beam in which a steak can be grilled.

Intensive work is underway in Tashkent to use the external combustion (Stirling) engine to convert radiant energy into heat, mechanical, and electrical energy. Experimental models have attained efficiency ratings of 30 percent. They are trying to use solar heat to steam out reinforced concrete articles, dry fruit, and treat cotton seeds before planting.

Scientists consider the use of solar engineering systems most promising in remote, hot, waterless places. In such places problems can be joined: store solar energy and use it primarily for domestic needs such as cooking food, heating homes during cold weather, and cooling them during hot water. In addition, a solar engine will bring salt water from deep within the earth and a desalinization unit will change it to drinking water. And of course, the complex would not be a complete without a solar glasshouse.

A four-story residential building, nursery school, and bath house using solar energy — all these objects are to be built in each oblast of Uzbekistan by the end of the five-year plan. One of the sovkhozes in the republic built a solar glasshouse facility even earlier. In short, solar energy is increasingly being called on not only for heat, cooking, and water, but also for farm work.

Professor A. A. Shakhov of Moscow has found that exposing seeds to pulses of concentrated solar light increases their germination capacity, yield, and resistance to diseases. Using the solar pulse method Uzbek microbiologists accelerated the growth of the microscopic algae Chlorella by one-third. Supplements of Chlorella in livestock feed increase weight gain by as much as 20 percent.

Attempts are even being made to use solar energy for welding and metallurgy; the energy concentrated in a solar furnace may produce a temperature of 4,000 degrees! Alloys produced in such a furnace have a purity that cannot be obtained under ordinary conditions.

These are the main lines of activity reflected in the comprehensive program. Judging by just this list, there is plenty of work. However, scientists who have been studying solar energy for many years were arguing, even before the program was put into effect, that it should be broadened. They mentioned the need for more extensive and closer ties between solar energy experts and scientific institutions capable of developing special design materials for solar units, cheaper semiconductors to efficiently convert light energy into electrical energy, and electrical equipment that can turn the reflectors of solar devices, as sensitively as sunflowers, in the direction of the constantly moving sun, which disappears behind the clouds and then re-emerges. They argued that solar energy can only develop successfully in alliance with

the leading branches of science and technology and that a strong, modern production base would be needed to carry out the comprehensive program.

Unfortunately, these arguments were not all accepted at first in the central planning bodies. Only very recently was it possible to get financing of solar energy projects increased somewhat before the end of the five-year plan.

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CSO: 1821

FUELS AND RELATED EQUIPMENT

GEOTHERMAL ELECTRIC POWER STATIONS

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 14 Jun 79 p 4

/Article by Doctor of Technical Sciences, Professor I. T. Alad'yev, chief of a laboratory of the State Scientific Research Institute of Power Engineering imeni G. M. Krzhizhanovskiy: "Share Your Heat, Planet!"/

> /Text/ Scientists and specialists have finished the drafting of a technical and economic substantiation, which proves the promise of the construction of geothermal electric power stations, which utilize the heat of the depths of the earth. It is proposed to built the first such stations in Stavropol'skiy Kray and Zakarpatskaya Oblast. Here is what Doctor of Technical Sciences, Professor I. T. Alad'yev, chief of a laboratory of the State Scientific Research Institute of Power Engineering imeni G. M. Krzhizhanovskiy, says about the potentials of this direction in the development of power engineering.

Today there are already grounds for the prediction that no latter than the first quarter of the next century mankind will meet a considerable share of its energy needs by means of the heat of the earth. It has been estimated that the thermal energy dispersed in the upper 10-km layer of the earth's crust alone is equivalent to 1.5×10^{16} tons of conventional fuel! In other words, its "reserves" exceed 1,000-fold (!) the thermal potential of all the proven deposits of fuel and hot springs taken together. Moreover, fourfold more energy annually rises from the depths of the planet to its surface than, judging from predictions, mankind will need in 2000.

Until recently we used only the natural "channel"--hot springs--for recovering this energy from the depths. Now, when the technique of deep drilling has made a qualitative step forward, the technology of recovering energy from practically dry hot rock also appears promising. Its essence is simple: wells are drilled to a depth of several kilometers. The pockets and cracks of the rock between them as if replace the "piping" of a steam boiler. When the natural permeability of the rock is inadequate, it can be increased by means of explosions or hydraulic impacts.

If water is injected under pressure into some of the wells, having passed through the "piping" of the rock, it is heated and returns to the surface through the other wells in the form of steam or its mixture with hot water. The steam can be fed to low-pressure turbines and electric power can be obtained.

It is planned to use precisely this principle at the GeoTES's /geothermal electric power stations/ with a capacity of 1,000 MW each, which are being developed in our country and have been proposed by specialists of a number of institutes and organizations. For the present two regions--the vicinity of the city of Budennovsk in Stavropol' and Mukachevo in Zakarpatskaya Oblast--are recognized as the most promising regions for the construction of such stations. They are regions of so-called geothermal anomalies: here the temperature of the depths reaches 170-200 degreees at depths of only 2.5-4.5 km. Conditions favorable for the construction of GeoTES's also exist in Dagestan, Krasnodarskiy Kray and the Crimea.

The estimates we recently made show that at some geothermal anomalies of the country alone it is possible to built GeoTES's with a total capacity of not less than 100,000 MW! And this is just slightly less than half the current capacities of electric power engineering.

The idea of using volcanoes also appears tempting, although slightly fantastic. In their zones the heat of the great depths comes close to the surface of the earth, figuratively speaking, in a concentrated form--as reservoirs of magma with temperatures in the thousands of degrees and more. For example, on Kamchatka a large intermediate magma chamber has been observed at a depth of only 2-3 km. A promising hydrothermal region with young volcanoes has also be discovered in the Transbaykal region, near the route of the Baykal-Amur Main Rail Line.

Of course, volcanoes are rare formations. And if we compare their "capacity" with the total flow of heat coming from the depths, the energy in them is not so great. But in return each volcano is a ready furnace with high temperatures and enormous reserves of heat, which could be recovered by the same wells. It has been estimated that a GeoTES with a capacity of 1 million kW, operating at a volcano for hundreds of years, would cool it by only one degree.

There are also more fantastic ideas for the use of the energy of volcanoes--up to the results of their eruption. Observations have shown that even after the lava flow has been covered by a crust on which it is possible to walk, the remaining magma retains heat for a long time. And the temperatures in it at a depth of a few meters reach 1,000 degrees and more. Therefore, having laid pipes here with circulating water, it is possible to obtain steam which has been heated to hundreds to degrees. Technically this task is quite feasible: American specialists have tried to drill wells in the "lake" of cooling magma at Kilauea volcano. They have also calculated the time during which this "lake" will cool--75 years. So, the construction at it of a GeoTES could be economically completely justified.

Of course, such plans can be implemented only in regions of active volcanism. But as a whole the use of the deep heat of the earth already in the foreseeable future will be able to cover at least one-tenth of the energy needs of mankind.

7807
CSO: 8144/1584

REASONS SOUGHT FOR HYDROELECTRIC POWER CONSTRUCTION DELAYS

Moscow PRAVDA in Russian 22 May 79 p 2

[Article by V. Maksimov, Deputy Party Bureau Secretary at the "Karelenergo" Regional Power Administration: "Is the Project Too Small?"]

[Text] Petrozavodsk--compared with many other branches of industry, the capital requirement of power-industry is extremely high. Hence uncompleted construction in that industry causes particularly great damage to the national economy. Precisely such a situation has arisen at the Yushkozerskaya GES [Hydroelectric Power Station].

Currently the Kostomukshskiy Mining and Concentrating Combine is being built in Karelia. It has been decided to supply it with electric power from the hydroelectric power stations at the Kema Rapids. Last year the construction of the Yushkozerskaya GES--the principal station on these rapids--was practically completed. However, owing to delays in the deliveries of turbines by the Leningrad Metal Plant, the hudroelectric project still has not started generating power.

Of course, from the modern viewpoint, the Yushkozerskaya GES is small, with a capacity of only 18,000 kilowatts. Perhaps that is why the USSR Ministry of Power and Electrification is not taking effective steps to put it into operation? But this apparent small wuantity harbors extremely substantial potential. At that location, allowing for the regulation of the rapids runoff, The Karelenergo Karelian Power Administration annually loses 78 million kilowatt-hours of electric power, which is equivalent to an excess burning of fuel on the scale of 27,000 tons at the power stations of the Northwestern OES [Integrated Power System].

In the present struggle for the most rigorous possible conservation of raw materials, fuel, and electric power, this is no negligible quantity. The count of losses is increasing. We do not feel confident that the Yushkozerskaya GES, though ready for operation, will soon provide power to Karelia's enterprises and construction projects.

Perhaps the USSR Ministry of Power and Electrification will tell us when will the "immobilized" millions of rubles of capital investments in the Yushkozerskaya GES be converted into electric power?

1386
CSO: 1822

COVER-UP FOR FUEL DEPOT INEFFICIENCY EXPOSED

Kiev RABOCHAYA GAZETA in Russian 23 Jun 79 p 3

[Article by V. Dekhtyarenko, Tsyurupinsk, Khersonskaya Oblast: "Behind All the Responses — Watch out for False Reports!"]

[Text] Inhabitants of the town of Radensk in Khersonskaya Oblast complained of poor work by the fuel storage depot in Tsyurupinsk. They have to stand in line for long periods of time and take time off from work at their enterprises in order to get fuel.

The editors directed their letter, containing a request to look into the matter and take steps, to the Tsyurupinskiy Rayon executive committee. However that body decided that the most suitable person to take up the case would be A. K. Kvashko, chairman of the rayon people's control committee.

In just a few months RABOCHAYA GAZETA received this reply:

"The Tsyurupinskiy Rayon people's control committee reports that the collective letter addressed to the editors from the town of Radensk has been checked. It was found that the fuel depot did in fact violate schedules and norms for distribution of coal and that long lines of means of transportation formed waiting for loading and weighing.

"These problems have now been solved, and Comrade Stepanov, director of the fuel storage depot, will be discharged in the immediate future."

This certainly appears to be a concrete and business-like response. The only thing we wondered was when would "the immediate future" be.

"Stepanov has already been removed," we were told by A. K. Kvashko, chairman of the rayon people's control committee. "Things have been put in order at the depot."

Soon after, however, the editorial mail brought another letter with the now-familiar return address. It said that Stepanov was still working at his old job and that the situation at the depot had not changed.

Kvashko had, to put it mildly, deceived both the inhabitants of Radensk and RABOCHAYA GAZETA. Whereas Afanaskiy Kuz'mich told the editors that the shortcomings had been taken care of and the careless manager released, what he wrote to the residents of the neighboring town was quite different:

"Steps have now been taken to eliminate the problems mentioned in the letter, and information on fuel depot director Stepanov concerning poor organization of work there has been turned over to the oblast administration of the fuel industry for them to draw organizational conclusions."

So we see that Afanasiy Kuz'mich lost his sense of proportion. He wanted very much for the letter to the capital to be a little sharper and tougher. So he just said the problems had been solved and Stepanov had already been discharged.

Incidentally, Stepanov's direct superiors in the Ukrainian Main Administration of the Fuel Industry and the oblast administration of the fuel industry learned of his discharge only by reading A. Kvashko's official response. They were indeed surprised. How could Afanisiy Kuz'mich remove Stepanov from his job over their heads? Moreover, Stepanov was not the director of the storage depot, as Kvashko said; he was chief of the interrayon fuel administration. This is perhaps another facet of the working style of the rayon people's control committee.

It was learned later that Kvashko did not even have the information from the inspection that was mentioned. The managers of the oblast fuel administration had no such papers either, although Kvashko said he sent them there.

"I reported my conclusions orally," Afanisiy Kuz'mich explained.

This is the place to recall that the editors sent the second complaint of poor work by the interrayon fuel administration to V. Chernikov, chairman of the Tsyurupinskiy Rayon executive committee, and he sent it to the people's control committee. The editors thought that after two serious warnings of this sort, the rayon leaders would bring this master of false reports into line and close up the case. But instead of a principled investigation, the chairman of the rayon executive committee and his subordinate workers wrote up reports for the rayon party committee and composed answers to the authors of the complaints which basically said one thing: the operations of the fuel storage depot were under constant watch by the rayon executive committee. But this did not improve the situation one bit.

The editors received a response from the Tsyurupinskiy Rayon party committee.

"A. Kvashko, chairman of the rayon people's control committee, has been cautioned about biased review of complaints about the work of the fuel storage depot and misinforming the newspaper and the public," wrote Comrade Belovetskiy, secretary of the rayon committee.

"V. Chernikov, chairman of the rayon executive committee, has been warned that a formalistic attitude toward reviewing complaints and statements by working people is not permissible."

The rayon committee, we see, did take steps and appears to have punished the guilty parties. But what was done to straighten things out at the fuel depot? There is not a single word about this.

The CPSU Central Committee decree entitled "Further Improvement of Ideological and Political Indoctrination Work" says: "The fear of open discussion of timely questions of public life, the tendency to smooth over and bypass unresolved problems and heated issues and to remain silent about shortcomings and hardships that exist in actual life, still exist today; these attitudes are incompatible with the challenges which the party is setting for ideological indoctrination work. Such an approach, the inclination to maintain appearances, does not help; it only makes it more difficult to solve our common problems."

It appears that the leaders of Tsyurupinskiy Rayon have serious occasion for a principled discussion of this very subject.

11,176
CSO: 1822

FINANCIAL ADJUSTMENTS NEEDED TO SMOOTH WEST SIBERIAN CONSTRUCTION

Moscow STROITEL'NAYA GAZETA in Russian 13 Jun 79 p 2

[Article by A. Volegov, manager of the Tyumenskaya Oblast office of USSR Stroybank: "The Bank, the Contractor, and the Oil Pipeline"]

> [Text] Why the procedure for granting credit to construction projects in the Tyumen' region has become outdated.

How can we be sure that every ruble invested by the state in development of the petroleum and gas industry in Western Siberia brings the greatest return? This is an enormously important question, especially if one considers the colossal resources being invested in development of the region. Capital investment has risen considerably in the current five-year plan. And this is in a region that not long ago had neither a large construction industry nor a developed infrastructure.

To give a graphic picture of the unprecedented complexity of developing the Tyumen' region, it is sufficient to point out that construction has unfolded in a vast area where the population density is one person per square kilometer. The building season is winter. And under these conditions it is necessary to build, in the shortest possible time, oil fields, trunk pipelines, and cities and communities. And now they are also working on large projects for the gas refining industry: plants to utilize by-product gas and the petrochemical giant, the Tobol'sk complex.

All the capital investment expended for the petroleum and gas industry of this region has already been repaid.

As an example, oil pipelines pay for themselves in an average of two years. However, these impressive achievements in no way lessen the urgency of the question of capital investment efficiency. There are reserves for greater efficiency too, for example fuller utilization of by-product petroleum gas. In the last 10 years losses from burning off by-product gas have reached an impressive figure. To some extent these are inevitable costs with such an unprecedented rate of growth in extraction.

The Tyumenskaya Oblast office of Stroybank considers attaining maximum economic efficiency from capital investments the primary objective of its activity. It makes broad use of its authority to influence the course of affairs in the Tyumen' region by means of credit. However, experience shows that credit efficiency can be improved. We must make the ruble work better.

What is happening today in the bank's relations with its primary contractors in the Tyumen' region?

It is common knowledge that the challenge has been posed for 1976-1980 of making the transition to planning and evaluating the activity of construction organizations on the basis of ready-to-use facilities and start-up complexes that are complete and turned over to the customer and are capable of producing output and rendering services. But it is not easy to decide what to consider finished output in the construction of large industrial projects.

Construction workers are inclined to consider all construction and installation jobs accepted by the customer for payment as finished output. This is an unsound interpretation. For example, a completed stage of oil pipeline construction is a very arbitrary concept. After all, oil cannot be moved along it. More than 60 percent of the capacities of construction organizations in Tyumenskaya Oblast are engaged in laying trunk pipelines. Pipeline builders are incorporating up to 80 percent of all capital investment in Tyumen' petroleum and gas. A consolidation of accounts in their sphere of activity would cause a significant increase in incomplete construction.

Stroybank sees the answer to this problem in a substantial broadening of the sphere of application of credit. In 1978 the Tyumen' office issued more than 7 billion rubles of credit. Our regular-term loan figure for various types of loans stays steady at 1-1.6 billion rubles; of this amount 810 million rubles, or more than 50 percent of total indebtedness, is in the production sphere (for materials and incomplete production), while the handling sphere (payment and charge credits) is 215 million rubles or 13.5 percent and credit to pay for machinery is 339 million rubles or more than 20 percent. Eighty-two percent of the total number of contracting organizations take different kinds of loans. Credit against physical assets constitutes 23 percent of the volume of contract work by construction organizations and bank credit covers 12 percent of incomplete production.

These figures illustrate the normal structure of credit investments and testify to a significant broadening of the sphere of application of bank credit. This unquestionably has a favorable effect on fulfillment of production and economic indexes by construction organizations and projects. However, the now-existing credit system needs revision. Under our conditions in the Tyumen' region it does not always work out in the national interest.

For example, construction workers were forced to create unusually large production stocks in order to fulfill directive assignments for launching gas and petroleum pipelines. After all, the flow of freight to the north takes place basically during the navigation season. Two years before the beginning of work pipe and other materials must be hauled to the route of the future pipeline. Meanwhile the amount of credit goes beyond the program of a single year. To overcome this problem two-year planning for stocks and means of covering them must be introduced.

The ceilings of Stroybank itself are low. Supplementary ceilings are given primarily at the end of the quarter when it is necessary to rescue the sales plan for the suppliers. This question becomes more critical every year.

In our opinion, the question of stepping up the beginning of financing, which drags out until May or June each year, is equally important. This greatly lessens the solvency of contractors, especially under Tyumen' conditions where directive construction times for projects are very often just half of normal times.

These hardships make contractors deeply indebted to suppliers and to Stroybank. In November-December 1978 the sum of non-payment by construction organizations in the oblast reached 400-500 million rubles. Thus, for example, organizations of the Ministry of Construction of Petroleum and Gas Industry Enterprises are generally working at a profit, but all of them are in debt. Their indebtedness to suppliers and to the bank amounts to more than 50 percent of the total sum of non-payments in the oblast. Each year subdivisions of the Ministry of Construction of Petroleum and Gas Industry Enterprises pay more than 10 million rubles in penalties for failure to settle accounts with suppliers on time.

In our opinion, the time has come to switch the granting of credit to contracting organizations in the Tyumen' region to the Belorussian method, credit until the completion of the project.

11,176
CSO: 1821

SERIOUS DELAYS IN CONSTRUCTION OF PIPELINE IN GEORGIA

Tbilisi ZARYA VOSTOKA in Russian 20 Jun 79 p 1

[Article by G. Antidze: "What Will Come of the Fourth Try?"]

[Text] The completion date for construction of the first phase of the petroleum pipeline from Samgori to Batumi has been extended three times.

It was conceived as a fast-moving construction project. The first phase of the trunk pipeline from Samgori to Batumi, on which construction began two and a half years ago, was supposed to go into operation at the end of the same year, 1977. According to calculations, there should not have been any delay with the second phase either, so that Samgori petroleum would be moved along the new route to the oil refinery at Batumi in the current five-year plan.

But delays occurred nonetheless. The construction project, stretching out over hundreds of kilometers, became bogged down right from the start and violations of the established schedule came one after another. The situation on the first phase was particularly alarming; in two and one half years it was changed three times from the ranks of start-up projects to "carryover" projects.

The last time the project moved from one list to another was somewhere in the middle of the first quarter of this year when it became clear that the construction workers would not be able to turn over the 145-kilometer sector from Samgori to Suramskiy Pass by the beginning of April. At that time a new date was set: June 1979. This was the fourth target date.

"There is just barely time," says T. Mirziashvili, chief of the Tbilisskiy Rayon petroleum pipeline administration. "But there is no certainty that the fourth attempt by the construction workers will prove more successful than the first three."

The anxiety of this representative of the purchaser is entirely reasonable: last month the construction workers were considerably behind with work that should have been done even earlier.

"The real trouble," says T. Mirziashvili, "is that the contractor still has not taken effective steps to speed up the pace of work."

The construction organizations of the Glavyuzhtruboprovodstroy [Main Southern Pipeline Construction] Association employed in construction of the pipeline are, indeed, in no hurry to take such steps. In fact, a look at the summaries on fulfillment of plans in the sectors of the first phase showed that the pace of work has slowed down markedly this year. For example, take insulation and laying the pipe in the trenches. There was 23 kilometers of this work to be done this year. The construction workers themselves do not consider this program too hard; there have been times when that much work was done in two or three months. But this time five months was not enough to do it.

The question of the need to step things up has been discussed many times at meetings and work conferences. The construction workers have given assurances that the situation would be corrected. Orders and instructions have been issued. But the main thing, real work, has been lacking.

Everything would seem to be simple and understandable. Based on the situation that now exists, build up the strength of the contracting organizations, move in additional machinery to the start-up project, and organize work in each sector precisely and accurately. This is exactly how the matter has been put at all the conferences. But what has come of it? Even in May, on the very eve of planned completion of the first phase, there continued to be just four brigades of installation workers and two columns of insulation workers on the line.

The purchaser has an especially large number of complaints against Gruztruboprovodstroy [Georgian Pipeline Construction], which was organized two and one half years ago in Khashuri specifically to build this pipeline. The new organization began operations with systematic violations of plan assignments and poor quality work. In this sense not much has changed in subsequent years. But after all, could this hurriedly formed subdivision do any better? This question can now be answered without any risk of error. Given the existing production base and available specialists which the new administration has today, nothing else could be expected from the collective.

The collectives of the two other construction-installation administrations of the general contractor, the Krasnodar and Armavir administrations which were brought in to join the Khashuri workers last year, cannot attain the necessary pace of work either.

In short, the start-up project has more than enough problems today. Brigades often stand idle because of equipment troubles and labor organization that is not always well thought-out. Another matter is the pumping stations in Samgori and Didi-Plevi, which have been put off until "later"; without them, however, the first phase of the line could hardly be considered completed. Then there is the cable communication line, which they have not even begun laying yet. But this line is a special topic in itself.

Everyone knows that a petroleum pipeline is a complex structure and automatic and remote control devices are needed to monitor its operation precisely. Also needed is the cable itself, which links the hundreds of sensing devices along the entire line into a single chain. The plan of work for the first phase envisioned spending 1 million rubles for construction of the cable communication line. Not a single kopeck has been spent yet. It all came down to the fact that for all these years there has been no one to lay the cable. At the end of last year it seemed that the problem had been solved. The Ministry of Communications of the Georgian SSR assigned the job to its own specialized construction-installation and repair trust. But here is a quotation from the most recent report of the Tbilisskiy Rayon petroleum pipeline administration, dated 1 June 1979: "Work on installation of the communications cable has not begun." So here is one more hitch. After so much trouble finding a trust to do the job, the start-up program proved beyond its capabilities. It did not have either the appropriate machinery or the necessary specialists to work in the complex topography. The problem had one more knot, and became even more critical.

Two and one half years, and one month. The month which is supposed to answer the main question: will the construction workers keep their word this time at least? One must agree that this is not a situation that favors calm, even work. But the danger of another failure, and it is more than realistic today, is not the final problem on the project. The Tbilisskiy Rayon petroleum pipeline administration has a long list of omissions and obvious defects left in the sectors which are represented in the construction workers' reports as already turned over to the customer. They began making up this list in the very first year of construction. And we must admit that there was no shortage of information. It was known that the pipeline was being built not just slowly, but also poorly. The welded junctions are poorly done. The pipe is not set deep enough for hundreds of meters at a time, and the insulation violates construction norms and rules — the construction workers allow themselves many shortcuts of this type. Furthermore, they are in no hurry to fix up the defects that have been identified. For example, let us consider the trestle pipeline crossing over the Ksani River. An inspection of the support pilings made as early as 1977 by specialists of the line service of the Tbilisskiy Rayon administration showed that all 54 pilings had flagrant violations of construction norms and rules; instead of concrete they were filled with plain dirt and pebbles. Almost two years have passed, but the construction workers have not even begun to do anything at this crossing.

So the situation continues to be extremely critical today. Will the construction workers come out of it all right? We are in no hurry to answer, because the construction workers themselves have a great deal to do with it. Only one thing is clear, and that is this: If the fourth attempt to launch the first phase of the Samgori — Batumi pipeline is to be successful, there must be better organization in every sector of the line and the management of the Glavyuzhtruboprovodstroy Association must have a greater interest in the work. But at the present time these things are sadly lacking in construction of the pipeline.

11,176
CSO :1822

PETROLEUM INDUSTRY INNOVATIONS DESCRIBED

Petroleum Desalinization Process

Moscow NEFTYANOVOYE KHOZYAYSTVO in Russian No 5, May 79 inserts on equipment and inside back cover, back cover

[Photos from insert and text of description: " A Process to Desalinize Petroleum Without Using Fresh Flush Water"]

[Text] One of the most important problems in preparing petroleum is to increase supplies of desalinized petroleum for export conditions. To solve it, the Tatar Scientific Research and Planning Institute for the Petroleum Industry, in conjunction with the UZ SMN, turned over to the Departmental Commission an efficient process for desalinizing petroleum without the use of fresh flush water.

It was determined that the petroleum that was processed in the field has a high physical-chemical potential, capable of having an efficient effect on petroleum of a lower quality. This occurs through a diffusionally distributed demulsifier in the petroleum, used to desalinize the dehydrated petroleum, which has a low physical-chemical potential and high gravitational and coalescing potentials, due to the increased concentration of globules of bed water, and a relatively high density.

When the potentials of desalinized and dehydrated petroleum are combined, there is a sharp reduction in the amount of inert material in the mixture as compared with its weighted average value because of the intensive coalescence of the drops when the mixture moves under turbulent conditions. As a result, the entire volume of mixed petroleum proves to be desalinized. The operation parameters for petroleum desalinization without using fresh water (ratio of dehydrated and desalinized petroleum in the mixture, temperature and quality of the dehydrated and desalinized petroleum, time for processing the mixture in the pipeline and its settling in the tanks) are chosen on the basis of comprehensive laboratory research in accordance with the instructions worked out by the Tatar Scientific Research and Planning Institute for the Petroleum Industry and approved by the Ministry of the Petroleum Industry.

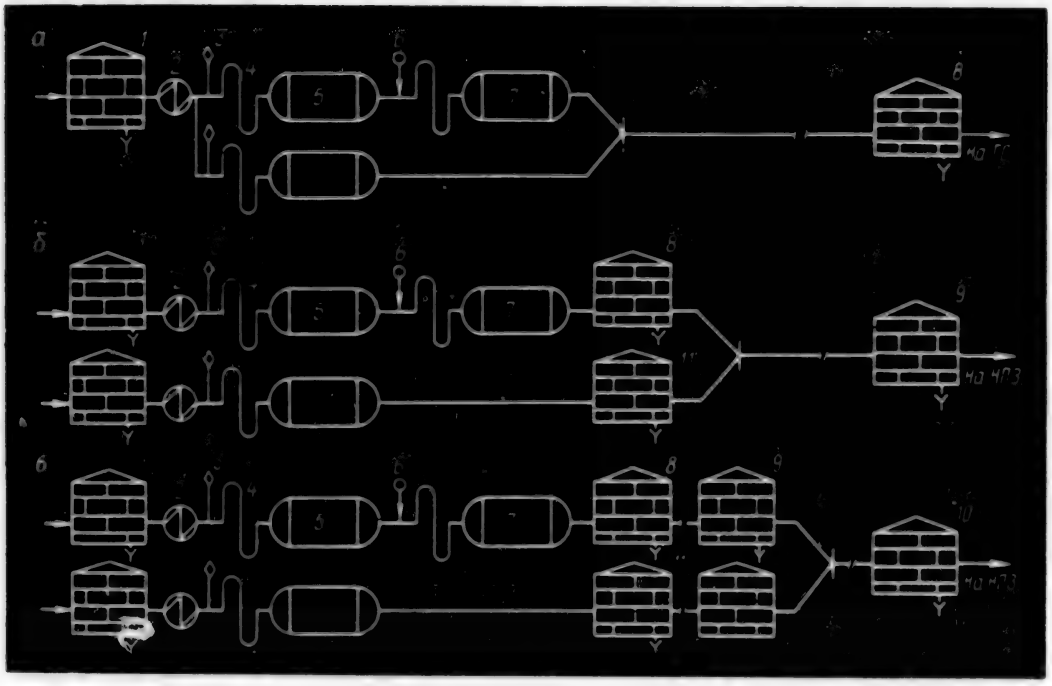


Figure 1. Flow Charts for Desalinizing Petroleum Without Using Fresh Flush Water in the Sections: Unit--Field Commodity Park (a), Field Commodity Park--Main Installations (b) and Main Installations--Intermediate Pumping Station (c)

1--raw materials tanks; 2--heat exchangers; 3--reagent feed; 4--drop-formers; 5--settling tanks of the dehydration stage; 6--fresh water feed; 7--settling tanks of the desalinization stage. Tanks: 8, 11--field commodity parks; 9--main installations; 10--intermediate pumping stations

The industrial flow sheets for desalinizing petroleum without using fresh flush water, using tanks and pipelines for industrial purposes, are shown in Figure 1. The charts given may be used, depending on the grade of the petroleum, at field facilities, which will make it possible to reduce the number of grades of petroleum, with respect to quality, to the minimum, and in most cases--to the highest grade.

The petroleum desalinization process under discussion was tested and put into operation at enterprises when dehydrated petroleum from Western Siberia was desalinized, using the main pipeline in the section from Kaleykino to Lopatino to Samara for industrial purposes. In accordance with the industrial system devised (Fig. 2), in the receiving pipe of the main pump of the Kaleykino petroleum pumping station, desalinized Romashkinskaya petroleum is mixed with dehydrated Tyumen' petroleum in a ratio of 3:1. The desalinized Romashkinskaya petroleum contains 0.2% water and 30-60 mg/l salts.

The average weighted salt content in the petroleum immediately after mixing is 100-120 mg/l. The average temperature of the desalinized petroleum reaches 20-25°C. The movement of the mixture in the main pipeline has the characteristic Reynolds number--80000. The pumping time is 48-50 hours.

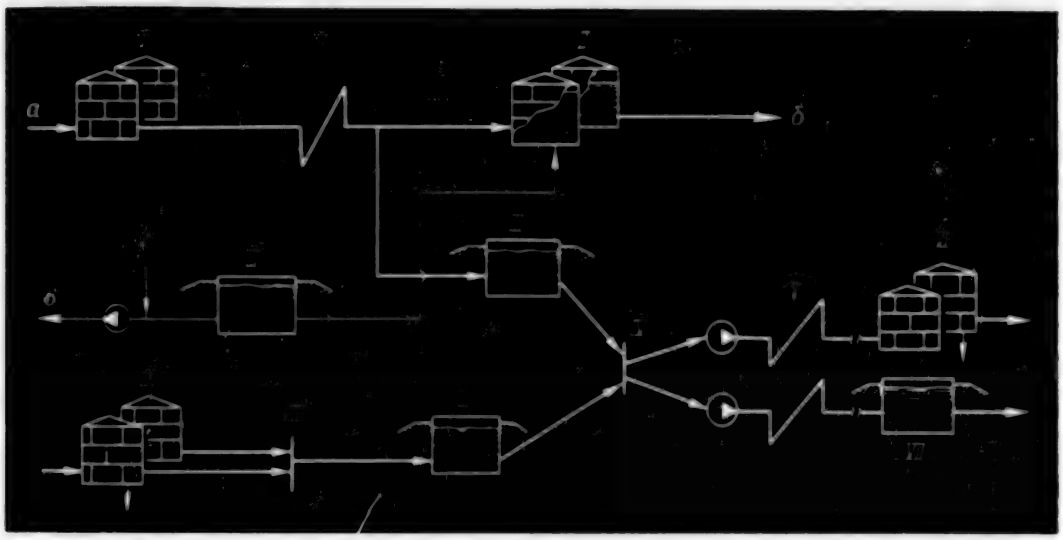


Figure 2. Flow Chart for Desalinization of Tyumen' Petroleum Without Using Fresh Flush Water

I--Subkhapkulovo NPS [petroleum pumping station], RVS [vertical welded petroleum tank]-5000; II--Kaleykino NPS, RVS-2000; III--ZhVR 100000; IV--mixing unit, water content 0.2%; V--emulsion destruction unit (length of pipeline to Samara NPS 2 km, diameter 1000 mm, speed 2 m/sec, time 38 hrs., temperature 30°C; diameter of pipeline to Lopatino NPS is 800 mm. At the mass eschange section of the pipeline the diameter of the drop is 20 μ , at the coalescence section--300 μ); VI--Samara NPS, RVS-2000 (unit for ballast disposal and obtaining desalinized petroleum); VII--Lopatino NPS, ZhBR-3000; VIII--petroleum desalinization unit; IX--field commodity parks, a--Tyumen' dehydrated petroleum; temperature 25-35°C, speed 1.79 m/sec, time 22 hrs; b--petroleum--at Gor'kiy, water content 1.3%, salt content 100-250 mg/l. Temperature 20-30°C; c--drainage water into absorption well; d--inhibitor feed

Because of the quasi-synergetic and hydrodynamic effects manifested when the mixture is transported along the main pipelines, its salt content after settling in the tanks of the Lopatino and Samara NPS for 2 hours is 30-40 mg/l, and the water content--0.1-0.2%.

In 1976-1977, in accordance with this process, up to 40 mg/l of over 30 million tons of dehydrated petroleum from Western Siberia was desalinized. The economic saving in this case was 16.8 million rubles. In accordance with the resolution of the Ministry of the Petroleum Industry of 1976, the process for desalinizing petroleum without using fresh flush water was recommended for widescale introduction at the sector's enterprises. Use of the method of compounding to improve the quality of the petroleum was included in the obligatory industrial measures for the Main Administration for Petroleum Transport in the 10th Five-Year Plan.

Putting this process into use at the country's deposits will make it possible to:

Desalinize substantial volumes of dehydrated petroleum within the confines of the petroleum-extractive regions in the shortest periods, without resorting to the construction of special units;

Solve, rapidly and efficiently, the problem of the discharge of ballast from the petroleum before it is transported to the petroleum refineries, and improve the environmental protection conditions;

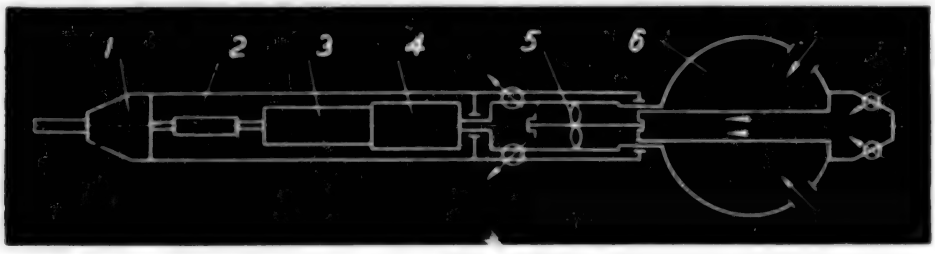
Save large material resources.

For information, write to: 423200, Bugul'ma, M. Dzhalilya St. 32, TatNIPIneft'.

PRS-1 Well Discharge Converter

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 5, May 79 insert on equipment

[Photo from insert and text of description]



This is designed to investigate oil wells with the temperature at the borehole up to +120°C and the pressure up to 30 MPa, in order to plot the shape of the flow and determine the yield of productive beds. The converter can be lowered into the borehole, both into pump-compressor pipes, and into the space between the pipes. It is calculated for operation with the type KOBDPM-2 single-core, armored cable. The equipment of the AIST station may be used as the recording instrument.

Technical Characteristics

Range of measuring yields, in m^3/hr	0.2-2.0
Limits of basic percentage error, in %	not over $\pm$ 5
Sensitivity in measuring yield, in $Hz/m^3 \cdot hr^{-1}$	10
Thermal stability, in °C	up to +120
Pressure stability, in MPa	up to 30
Dimensions, in mm:	
length	1700
diameter	28
diameter of the open packer	155
Working medium	petroleum, water, emulsion

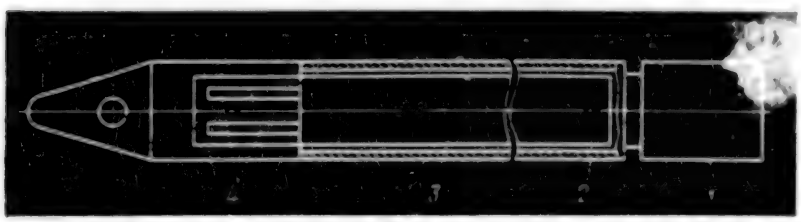
The design of the PRS-1 is distinguished from the existing analogs by: the new drive for the packer (thermal-fluid), which ensures the thermal stability of the converter in general up to +120°C; a converter diameter reduced from 36 (KOBRA-36R) to 28 mm; increased reliability of the packing (i.e., the reproductive capacity of the converter's indicators with a change in the packer) and increased sensitivity of the instrument as the result of changing the design of the yield sensing element (turbines).

The converter consists of a sweating thimble (1), a thermal-resistant chamber (2), an electric heater (3), a thermal-fluid packer drive (4), rotors (5), a packer (6). All the connections are made tight with rubber rings. The technical-economic effect from putting into operation the PRS-1 well discharge converter is 4,700 rubles a year. In 1978 the converter underwent state warranty tests. Series output is planned, beginning in 1980, at the Bugul'minsk Nefteavtomatika Experimental Plant. The developer is the All-Union Scientific Research Institute for Oil Field Geophysics (Ufa, 8 Marta St. 126).

PTS-1 Well Temperature Converter

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 5, May 79 insert on equipment

[Photo from insert and text of description]



It is designed to measure the temperature of the working environment and determine the temperature anomalies in existing oil and injection wells, with great sensitivity.

The output signal on the surface is transmitted along a KOBDFM-2 cable up to 5000 meters long, on which the instrument is lowered into the well by means of AIST station winch, or a well-logging hoist. The AIST station apparatus or any well-logging laboratory apparatus is used as the recording instrument.

Technical Specifications

Temperature measurement range, in °C	5-120
Conversion coefficient, in Hz/°C	at least 900
Sensitivity, in °C	not over 0.005
Basic percentage error, in %	not over $\pm$0.5
Time lag, in sec	not over 20
Feed voltage (direct current), in volts	40 $\pm$ 4
Intake power, in watts	2 $\pm$ 1
Utilized current, in mA	not over 50
Parameters of output signal of converter with a temperature $\pm$20$\pm$1°C and voltage 40$\pm$4 volts:	
frequency, in kHz	20^{+8}_{-1}
amplitude of recurring signal, in volts	at least 1
Shape of output signal	sinusoidal
Working medium	stratal water, oil
Parameters of working medium:	
temperature, in °C	not over 120
maximum permissible working excess pressure, in mPa	not over 30
Dimensions, in mm:	
diameter	28+0.1
length	945$\pm$1

The PTS-1 well temperature transformer consists of the tip (1), the housing (2), the electron unit (3) and the temperature pickup (4). It differs from the existing well thermometers because of its extreme sensitivity, which makes it possible to measure small amounts of temperature abnormalities.

In contrast to the TChG-28 thermometer, in the PTS-1 temperature converter K10-17V type capacitors with a positive and negative temperature coefficient of capacitance are used as the heat-sensitive element, which ensures a greater deviation in frequency and accordingly greater sensitivity when these capacitors are included in the measuring generators.

Getting rid of the reference generator that the TChG-28 has, and using two measuring generators in the system also made it possible to increase the conversion factor. Expensive ceramic housings for the inductance coils, reeled by the hot method, are used in the oscillatory circuits of the

TChG-28 generators. The PTS-1 converter uses type SB-12 carbon cores, and the inductance coils are made by the ordinary method. Using two measuring generators made it possible to reduce the destabilizing factors and do away with the hot method of winding the inductance coils.

The technical-economic effect from putting the PTS-1 temperature converter into operation is 3,600 rubles a year.

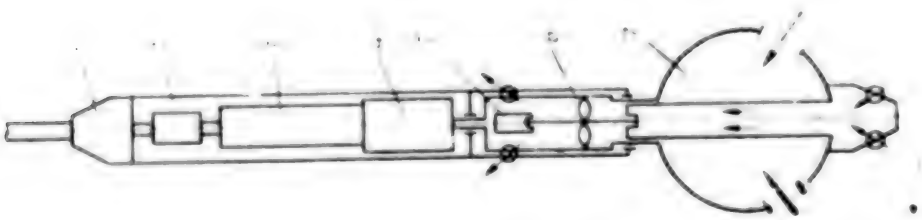
In 1978 the PTS-1 underwent state warranty testing, and beginning in 1980 its series output is planned at the Bugul'minskiy Nefteavtomatika Experimental Plant.

Developer--All-Union Scientific Research Institute of Oilfield Geophysics (Ufa, 8 Marta St., 126).

PRVS-1 Well Yield and Moisture Content Converter

Moscow NEFTANOYE KHOZYAYSTVO in Russian No 5, May 79 inside back cover

[Photo from inside back cover and text of description]



It is designed to study oil wells with a temperature at the borehole up to +120°C and pressure up to 30 MPa, in order to plot the shape of the flow and determine the yield of individual productive beds and watery intervals. The converter can be lowered into the borehole both in pump-compressor pipes and in the space between the pipes. It is designed for work with a type KOBDFM-2 single armored cable. The AIST station equipment may be used as the recording instrument.

The design of the PRVS-1 is distinguished from existing analogs by: the new packer drive (warm-liquid), which ensures the thermal stability of the converter on the whole up to +120°C; a converter diameter reduced to 28 mm; increased reliability of the packing (i.e., reproducability of the indicators of the converter with a change in the packer) and increased sensitivity of the instrument as the result of a change in the design of the discharge pickup (impeller). The reliability of the moisture content pickup is greater than that of the type KORRA-36RV instrument.

The PRVS-1 converter consists of a sweating thimble (1), thermal liquid chamber (2), electric heater (3), thermal liquid packer drive (4), moisture content pickup (5), impellers (6) and a packer (7). All the connections are made tight with rubber rings.

The technical-economic effect from putting the PRVS-1 yield and moisture content converter into operation is 5,700 rubles a year. In 1978 the converter underwent state warranty testing, and beginning in 1980 its series output is planned at the Bugul'minskiy Nefteavtomatika Experimental Plant.

Developer--All-Union Scientific Research Institute of Oilfield Geophysics (Ufa, 8 Marta St., 126).

Specifications

Range of yield measurement, in m^3/hr	0.2-2.0
Volumetric content of water and oil, in %	0-60
Limits of basic proportional error in measuring	
yield, in %	± 4
volumetric content of water and oil, in %	± 6
Sensitivity when measuring yield, in $Hz/m^3 \cdot hr^{-1}$	at least 10
Volumetric content of water and oil, in Hz/%	at least 50
Thermal stability, in °C	up to +120
Pressure stability, in MPa	up to 30
Working medium	oil, water-oil emulsion, water
Dimensions, in mm, not over:	
length	2200
diameter	28
diameter of open packer	155

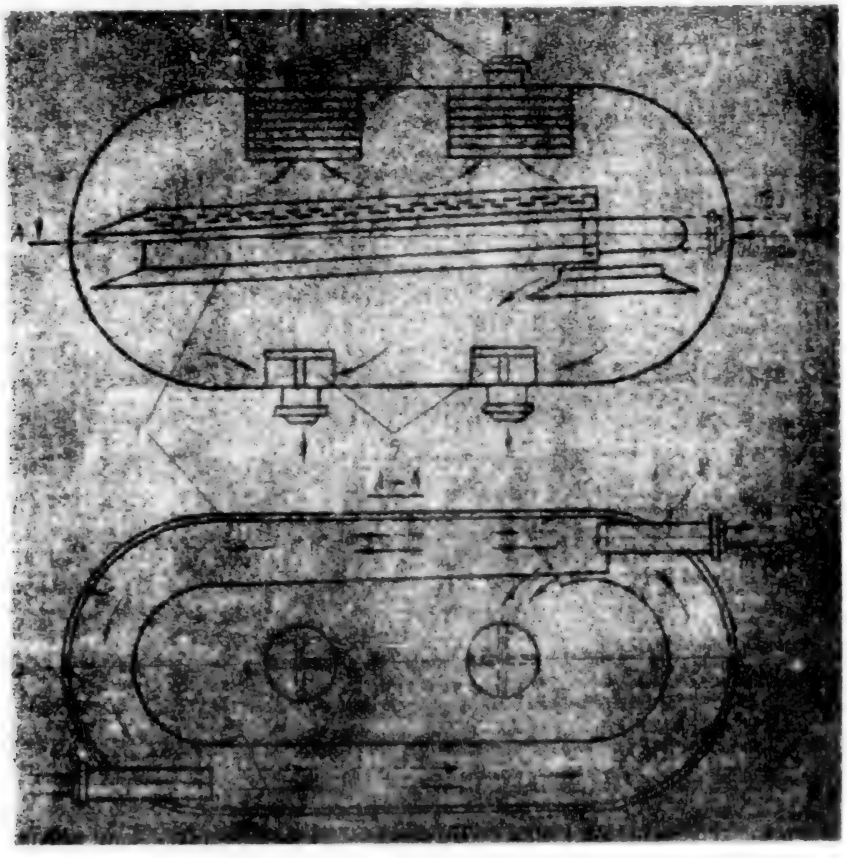
Separator To Separate Gas From Oil

Moscow NEFTYANOYE KHOZYAYSTVO in Russian No 5, May 79 back cover

[Photo from back cover and text of description]

The suggested separator with reduced dispersion of the liquid with the input and improved conditions for separation of the phases in the container operates in the following way. The oil-gas mixture enters the overflow launders (1) through the input pipes (2) and moves along it, traversing a route equal to half the perimeter of the separator in its cross section (diagram). At the same time the phases are gravitationally and inertionally separated, and the oil is partially poured through the space between the launder and the wall into the lower part of the container. The gas, being separated in the launders, flows around the foam baffle and then goes into the gas dryer (4) and the gas bleeders (3). In the lower part of the separator the rate of pour of the liquid from the launders is reduced by counter flows, which is particularly important when a large portion of liquid is received in the separator (liquid stoppers). To eliminate

funnel-shaping and leakage of the gas through the drain connections, the rest of the vortices are extinguished by the dampers (5).



The estimated throughput of this separator is 30 percent higher than the productivity of the type NGS separators with the same industrial capacity.

Developer--TurkmenNIPIneft'.

For information write to: 745100, Nebit-Dag, Svoboda St., 40, TurkmenNIPIneft'.

12151
CSO: 1822

TYUMEN' OIL PROSPECTING EXPANDED

Moscow SOVETSKAYA ROSSIYA in Russian 1 Jun 79 p 1

[Article by SOVETSKAYA ROSSIYA correspondent Yu. Burov: "The Signature of Tyumen'"]

[Text] Inspired by the greeting of Comrade L. I. Brezhnev, prospectors in the Ob' River region are activating additional resources and accelerating borehole drillings.

Yesterday the mood over the oilfields are uplifted. The oil workers animatedly exchanged their impressions of the good news heard on the radio in the morning: the greeting addressed by the general secretary of the CPSU Central Committee, Leonid Ilich Brezhnev, to the leading collectives which achieved the highest indexes of performance.

...The area on which the famed crew of foreman Gennadiy Levin works is like an islet in the midst of a limitless lake. Here a tightly packed bundle of slanting pipes reaching the underground treasure trove has to be installed. The drilling in this region is impeded by the abundance of gas in the strata, which requires special precautions. Nevertheless, the brigade has by now reached the targest originally set for it for August 1980. Four other crews of the First Nizhnevartobsk Administration also have by now reached targets originally set for the last year of the Jubilee Five-Year Plan.

Above all, competition under the slogan "Work Without Laggards" helped. Currently Levin's brigade is immediately followed by the brigade of S. Osadets, a pupil of the famous foreman.

The brigades of the Second Surgut Administration of Drilling Operations also work successfully. Last year each brigade there constructed more than 80,000 meters of boreholes without any breakdowns or defects. Such indexes have not been reached by any other drilling crew in the nation.

The Tyumen' oilmen have spread out to a large number of new deposits distant from base towns and settlements and, as a rule, relatively primitive. The need to expand the volume of drilling operations by a factor of one and a half times already within the present year entails the recruitment of new workers.

Given these rigorous condition, special attention should be devoted to singling out and propagating advanced knowhow. Every oilfield should consider the innovations introduced at Surgut where already at the outset the development of the production base was assured. Today that base is large enough to assure drilling 500,000 meters of boreholes.

The results of the competition between two drilling collectives of the Nizhnevartovsk and Surgut administrations demonstrate that the development of the Tyumen' oilfields can be markedly accelerated. The subdivisions of the Glavtyumenneftegaz Trust contain quite a few other crews whose experience merits emulation.

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BUILDING SURGUT-POLOTSK PIPELINE

Moscow SOVETSKAYA ROSSIYA in Russian 30 May 79 p 1

[Article by N. Chernavin: "An Innovatory Feat: the Most Difficult Section of the Surgut-Polotsk Pipeline is Completed"]

[Text] On the route of the Surgut-Polotsk Pipeline the builders have completed ahead of schedule the most difficult section running from the deposits of West Siberia to Perm'. They have welded, insulated and laid 1257 kilometers of pipe. Petroleum is now flowing through the first hundred kilometers.

A demanding test is being undergone by the route: the trunkline is being tested under high pressure.

The builders carried out a huge volume of operations. They felled timber from 4,500 hectares of the route and excavated 12.5 million cubic meters of earth from under the route. Tens of large and small rivers have been surmounted, and a large number of highway and railroad-track crossing points have been built. Hundreds of kilometers of impassable swamps, taiga and permafrost are now behind. The difficulties that had to be overcome are illustrated by the instance alone that the builders laid more than 300 kilometers of foundation-beam tracks over swamps, some of them built of 12 layers of logs.

The Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises] has allotted to this pipeline its best resources, including thousands of modern heavy-duty machines. This most important fuel-and power construction project has been additionally staffed with about a thousand skilled welders, machinery operators, drivers of pipe-carrying trucks and other experts.

Socialist labor competition based on the "relay-baton" principle has been extensively introduced. It has been joined by builders, designers, suppliers of machinery and equipment, transport workers and pipeline operators.

The leader of the insulation workers' brigade, Viktor Pavlovich Koryashkin, declared: "We have the closest contact with the welders and excavation workers. We work smoothly together. The excavation workers transmitted in time the completed trench to the welders, and the welders transmitted to us the welded pipeline. This is what enabled us to markedly overfulfill the target and insulate more than a kilometer of the pipeline within one day."

The latest innovations in the science and practice of pipeline construction have been introduced in this project. This refers to both excavation and welding operations as well as to insultating andpipe-laying operations. Welding, for example, has been done by such highly efficient machines as Sever-1, Ogonek and Duga.

The pump stations are also being built in a new manner. The main pump station at Surgut has been put into operation. Its period of construction was only one-third as long as that obtained by traditional techniques.

Currently the relocation of the structural subdivisions to new sections of the giant petroleum pipeline farther to the west is beginning. The pace of operations at Gor'kiy and in Ivanovskaya, Yaroslavskaya and other oblasts is increasing. The pipeline is increasingly advancing toward the center of this country.

In June the "black gold" of Samotlor and of the Khlmogorskoye, Fedorovskoye and other deposits will begin flowing toward Perm' via the new underground transport system, and in October it will arrive at Gor'kiy. Next summer it will begin to be refined at Yaroslavl', and in the fall it will reach Polotsk. It will arrive only to become transformed into gasoline, diesel fuel, mineral fertilizers, electric power and consumer goods so as to faithfully serve the nation's economy.

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CONSTRUCTION PROGRESSING ON UZBEK GAS REFINEKY PROJECT

Moscow IZVESTIYA in Russian 22 Jun 79 p 1

[Article by L'vov, correspondent of the Press Center of the USSR Ministry of Construction of Petroleum and Gas Industry Enterprises, Uzbek SSR]

[Excerpts] Uzbekistan is building a major fuel energy and gas chemistry installation in the desert.

The buildings of the Mubarek gas refinery are rising above the hot sands like a mirage. But as you approach the "mirage" becomes more and more distinct and real. The intricate shapes of production columns and scaffolding interwoven by piping stand out clearly.

For several years now the Uzbekistan enterprise has been sending refined natural gas from underground stores into the Bukhara — Urals and Central Asia — Central Zone pipeline systems. As a "by-product" they are receiving highly pure native sulfur; the crude gas is saturated with its dust. Hundreds of thousands of tons of the yellow powder, the key ingredient in the mineral fertilizer industry and crucial component in chemical and industrial rubber production, are sent from here to customers each year.

The Mubarek Gas Refinery was a prototype for the true giant of the gas chemical industry, the Orenburg Gas Refinery, which is situated at the point of origin of the Soyuz gas pipeline. The enterprise in the Kyzylkumy Desert is now experiencing a rebirth.

The Central Asian construction workers of the Ministry of Construction of Petroleum and Gas Industry Enterprises have a large production program. The start-up group for the fourth year of the five-year plan includes three major gas refinining units with a productivity of several billion cubic meters a year, an installation to produce 300,000 tons of sulfur gas, the head structures at the Uchkyr deposit with a capacity of 900 million cubic meters, and 60 kilometers of gas pipeline from Dengizkul' through Khauzak to Mubarek. Planned projects also include increasing the capacities of the Gazli, Gallyaaral', and Chinaz

compressor plants, beginning construction of the comprehensive gas preparation installation at the Dengizkul'-Khauzak deposit, and stepping up work on the Shurtan — Syrdar'inskaya GRES.

Construction work is spread over several hundred square kilometers. But the main efforts of the collectives of the Bukharagazpromstroy, Sredazneftegazmontazh, Naipgazstroy, Sredazneftegazstroy, and other trusts are directed to completing the facilities of the gas refinery and adjacent fields. The launching is to take place in the third and fourth quarters, and the workers consider every hour, literally every minute, to be precious.

Nobody has it easy, but this is especially true of the operators of earth-moving machines. The desert puts up obstacles at every step. The fine sand is so mobile that it literally pours out of excavator buckets, flows under the blade of the bulldozer, and floats beneath gusts of wind. But the machine operators have learned how to handle the barchan sands. Like dozens of their colleagues, G. Davletshin's excavator crew and A. Nedozhogin's brigade of bulldozer operators are already workong on the August program. This gives the concrete workers, welders, and installers room to work.

A column of pipe trucks, operated by A. Puzikov's outstanding crew, is heading for the pipeline route, raising a trail of dense, pungent dust. The desert expanse is treacherous. It seems that wherever you want to drive, you can. But in some places the sand is more impassable than a swamp. The crew leader has his own unique kind of "radar" for driving the vehicles. The routes selected are not only convenient, but also short. The result is two, and sometimes three, additional trips per shift.

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PEAT INDUSTRY IN BELORUSSIAN SSR ASSESSED

Minsk SOVETSKAYA BELORUSSIYA in Russian 21 May 79 p 3

[BELTA communique: "At the Commission on Industry, Belorussian SSR Supreme Soviet"]

[Text] A session of the Permanent Commission on Industry, Belorussian SSR Supreme Soviet, was held under the chairmanship of Deputy Ya. A. Mikulovich. The fulfillment of the plan targets for the production of briquets for the needs of the population and communal users by the Belorussian SSR Ministry of Fuel Industry was discussed. A report was presented by the Belorussian SSR Ministry of Fuel Industry G. A. Filippov, as was a co-report by Deputy V. A. Belyy.

The Commission noted that the ministry and the subordinated enterprises are working to elevate the technical level of production and to introduce new equipment and advanced technology. At a number of peat-briquet plants the preparatory and drying shops have been renovated, and more reliable conveyor belts have been installed. The plant collectives compete to increase the efficiency and quality of production. The targets for the first 3 years of the Five-Year Plan concerning briquet output and increase in labor productivity have been overfulfilled. The plan is being fulfilled on the whole as regards the principal technical-economic indexes.

At the same time, a considerable number of enterprises lags behind the plan targets for the production of briquets and increase in labor productivity. Certain plants are slow to prepare production space and equipment for seasonal operation, tolerate excessively long stoppages of machinery and technological equipment, and still produce briquets of low quality. Through the fault of the motor transport enterprises the centralized hauls of fuel from the plants often lag behind schedule.

The resolution adopted by the commission defines the measures to assure a smooth performance of all peat-briquet plants and to improve the quality of the briquets with the object of satisfying demand more fully.

Deputy Chairman of the Presidium of the Belorussian SSR Supreme Soviet V. Ye. Lobanok took part in the work of the commission

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FUELS AND RELATED EQUIPMENT

GEOLOGISTS AND DESIGNERS IN COAL BASIN ACCUSED OF FAULTY COOPERATION

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 13 May 79 p 2

[Article by SOTSIALISTICHESKAYA INDUSTRIYA correspondent B. Glotov: "The Lost Seam: Give a Hand, Specialist!"]

> [Text] As is known, an efficient and smooth performance by coal miners largely depends on people in allied professions--geologists and designers. Many underground problems could have been avoided if these individuals were to do their work properly. Sometimes, however, they fail the miners of the Karagandaugol' Karaganda Colliery.

The workers of the Coal Mine imeni Kalinin had been counting a lot on that new sector, which was expected to yeild several million tons of fuel to the surface. Two galleries had to be cut in order to commence coal extraction from seam K-12 in the northern block. The tunnelers carried out preparatory work in three parallel passages. Each brigade traveled a distance of 100-200 meters through the seam. Then suddenly the seam disappeared. Searches of the missing seam lasted for two weeks without success. It became clear that a complicated infraction of the rules of mining geology occurred there--splitting of the seam and dilution. The work had to be discontinued and transferred to another seam. And a team from the Karagandauglerazvedka Karaganda Coal Prospecting Trust was summoned to eliminate the violation. That year the mine underdelivered about 40,000 tons of coal.

The team's chief geologist, V. Zinchenko, attempted to justify the occurrence: 'Nothing terrible happened. To us this is a normal phenomenon, so that there is no special reason for worrying."

Let us see how much this "normal" occurrence cost the state.

Rectifying the defect cost about R 80,000. A protocol for canceling 378,000 tons of coal not existing in nature was drawn up. Owing to major miscalculations by geologists last year more than one million tons of coal was deleted from the balance sheet of the Mine imeni Kalinin. Instances of

this kind are quite a few. Owing to incompetent geologic prospecting 966,000 tons of coal had to be deleted from the balance sheet of the Dolinskaya Mine. Similar operations had to be carried out at many other coal mines in the Basin. The poor quality of geologic prospecting costs the personnel of the association's mines a total of as much as 10 million tons of coal that have annually to be deleted!

The practice of geologic estimates leaves much to be desired. After they complete the prospecting of a given sector, the geologists draft a report for confirmation by the state Commission for Mineral Resources under the USSR Council of Ministers. But first that report is discussed by the scientific-technical council of the prospecting team in the presence of invited representatives of the geologic division of the Karagandaugol' Association and the Karagandagiproshakht Mine Design Institute, who have the right to express their comments on the report during the discussions. The geologists should pay attention to such comments. But normally few comments are voiced at the council meeting, because neither the staff of the association's geologic division nor the designers have the time to study thoroughly the report in advance of the meeting. After all, such reports often are distributed a few days prior to the meeting rather than a month in advance as specified. The resulting situation does not trouble the prospecting geologists. It is also tolerated by the association's chief geologist S. Baypakov, who is supposed to have the duty of defending the interests of the miners. It is the miners working underground who have to pay for his condescending attitude.

Next to the geological division of the Karagandaugol' Association, the designers represent another authority having the right to demand reliable data from the deposit prospectors. But, like the staff of the geological division, the designers also retreat to the protection of the protocols of the State Commission for Reserves. Their argument is that since the geological reports have been approved, there is no foundation for doubting the conclusions of the commission members.

When carefully examined, however, the procedure for the review of geological reports establsiehd by the State Commission for Reserves does not contribute to improving their quality. The findings of the Karagandauglerazvedka prospecting team are evaluated by several geological experts confirmed by the USSR State Committee for Reserves. Most often they do not find it expedient to issue dispassionate and objective verdicts. Why? They receive honoraria from the Karagandauglerazvedka.

The existing system for the selection of reviewers must be revised. Reports of the Karagandauglerazvedka prospecting teams should be reviewed not by isolated experts but by the representatives of the interested organizations--the Karagandaugol' Association and the Karagandagiproshakhu Institute.

Geologists, designers and miners are all links in a single chain. The coalmen of the Karaganda Basin work in mines designed by the Karagandagiproshakht Institue and the design office of the Karagandaugol' Association.

The basis for drafting the designs of the existing mines is the geological information provided by the Karagandauglerazvedka prospecting team. Well, and since the geologists' reports contain blank spots, this certainly affects the quality of the designs.

It is customary not to allow designers to draft designs if the extent of exploration of seams (the most favorable conditions of occurrence of seams) is less than 50 percent. But at the Mine imeni Kalinin designs were drafted for the K-12 seam in the northern and central units where the degree of exploration is only 28 percent; and at the Kirovskaya Mine, 35 percent.

These designs were prepared by the personnel of the design office of the Karagandaugol' Association.

The chief project engineer P. Kovalenko admits: "We know we fail the miners. Hasty work is a major problem. Often we are given only a month or a few weeks to draft a design for whcih the standard preparation period is six months."

It also happens that the Karagandagiproshakht Institute refuses for some reason to handle design work: no problem, it will be done "in fire-alarm haste" by the staff of the association's office on the order of the management. No one is worried about the consequences. The main thing is that the design should be ready on the target date. Within the Association there also exists the opinion that a design is necessary only for submitting it on time to the bank, as otherwise no money will be granted for conducting the operations. That is why the design specifications are often ignored at the mines and extraction is begun on the basis of on-the-spot experience.

Such is the fate of the project designs developed by the association's office with its small staff compared with the staff of the Karagandagiproshakht Institute--the prime design contractor for the Karagandaugol' Association. It might seem that this large and solid institute should cope with its work load, but the miners have many complaints about it.

For example, the designers planned a fifth level shaft yard--a major underground structure--at the Sokurskaya Mine to be built in weak rocks. For deeper levels such a solution would be acceptable, but for a depth of 550 meters this represents a serious mistake. Owing to the considerable rock pressure the timbering of the recently completed shaft yard fell apart. Now an additional R 200,000 to R 300,000 will be needed to reinforce the timbering.

The activities of the Karagandagiproshakht Institute and the association's design office are, depending on cost, approved either by the association or by the USSR Ministry of Coal Industry. But while the ministry's experts thoroughly verify and analyze project designs, within the association,

in the best case. the design work is inspected by the staff of the directorate of capital and construction who, however, are not qualified for examining thoroughly and competently every design project. The engineering directorate, which should have the duty of examining the projects, avoids handling these matters.

Mistakes and oversights by designers and prospecting geologists should be dtected and eliminated not in the course of the actual tunneling and coal extraction, when it is already too late to remedy the situation, but well in advance, in the course of a solicitous and fundamental assessment of geological findings and designs. At many of the basin's mines new sectors are organized every year. The miners need reliable geological data and reliable designs. So far, these are not reliable.

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BRIEFS

PETROLEUM DRILLING LEADER--Tyumen'--The collective of the Surgut Drilling Administration No 2 was the leader in the socialist competition among the underground drillers in Western Siberia. Yesterday the 10,000th above-plan meter of oil wells was drilled. By making efficient use of the internal potentials, each brigade is working here in accordance with a scientifically substantiated stepped-up schedule, and is collaborating with the related workers. Competition with the workers of the Nizhnevartovskiy Drilling Administration No 1 is helping to achieve very good results. [Text] [Moscow PRAVDA in Russian 1 Jun 79 p 1] 12151

GAS RESERVOIR UNDER CASPIAN--Baku--A flow of natural gas was obtained for the first time in the Baku offshore oil fields from a depth of about 6000 meters. The exploratory well, No 42, which disclosed a productive bed so far from the surface, was included in the ranks of industrial wells, and today was hooked up to the main pipeline. Kh. Yusufzade, chief geologist of the Kaspneftegazprom Association, comments on the new page in the work chronicles of the country's oldest industry: "The daily yield from the discovery well is 1.3 million cubic meters of fuel. The geologists' predictions on the promising potential in seeking oil and gas at great depths have thus been confirmed." The Azerbaydzhan tunnelers gave an enthusiastic reception to Comrade L. I. Brezhnev's congratulatory message to the Tyumen' drillers. The Siberian workers' initiative to achieve the highest output for each brigade is being widely supported by the Caspian workers. [Text] [Moscow PRAVDA in Russian 1 Jun 79 p 2] 12151

GAS DEPOSIT DISCOVERED--This year the collective of the Achakskoye Order of the Badge of Honor Drilling Administration of the Achakgazdobycha Production Association discovered a promising new gas deposit. It is located not far from the Kirpichi' gas fields. The gas reservoir was discovered at a depth of over 3000 meters. Studies of the first well drilled indicated that its daily yield would be 800,000 cubic meters of natural fuel. The new deposit is also promising because it is located alongside the main gas line from Shatlyk to Khiva. It was named for the first cosmonaut, Yu. Gagarin. The drilling of industrial wells at the new deposit is now proceeding at stepped-up rates. Competition for rapid drilling penetration to the gas deposit was widely developed among the administration's brigades. The brigade of foreman

Aleksander Yakovlev is in the lead. The drill bit has already reached the 2600-meter mark here. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 18 Mar 79 p 2] 12151

TETS AHEAD OF SCHEDULE--The construction workers of the Mazheykyaskaya TETs--the energy heart for the production of petroleum products, being constructed in the Lithuanian SSR in accordance with the resolutions of the 25th CPSU Congress--have started the installation of the turbines ahead of the schedule. The first current and industrial steam of the central heating and power plant will be produced ahead of schedule--in September of this year. [Text] [Moscow PRAVDA in Russian 28 May 79 p 1] 12151

SURGUT-POLOTSK PIPELINE--The subdivisions of the Omsknefteprovodstroy Trust working on laying the 300-kilometer section of the "river of oil" from Surgut to Polotsk fulfilled their socialist obligations ahead of schedule. The insulation-installation columns of V. Shakhov, N. Tlitstseri and V. Rzhenko and the excavator operator crews of V. Koshin, V. Tumanov and V. Nefedov and their comrades have contributed a great deal of work so that the section could be put into operation ahead of schedule. The Tavda, Konda and Molva rivers, marshes and swamps were on the route of the construction workers. [Text] [Moscow PRAVDA in Russian 28 May 79 p 1] 12151

ESTONIAN GRES RECORD--Tallin--For the first time in its history the Estonian GRES, operating with local fuel shales, last month produced about a billion kilowatt-hours of electric power. If the outstanding collective secures this rate, this year the Baltic power engineering workers will pass a record milestone--they will achieve the 10-billion mark. The Estonian GRES today is producing the cheapest electric energy in the northwestern part of our country. The collective has taken on the obligation of working without any people lagging behind. The shifts supervised by engineers Kh. E. Kiberman and Yu. Kopylov are setting the tone in the competition. The shift sponsored by senior duty engineer L. Shaparenko, which lagged behind for a long time, has reached the level of the leading workers. [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 23 May 79 p 1] 12151

BOILER GIANT--It took 750 railroad flatcars to deliver the boiler equipment from the manufacturing plants to the Kostromskaya GRES. The final parts of this unit for a 1,200-kilowatt power block arrived at the proving grounds. When one considers that the boiler weighs almost 25,000 tons, and is taller than a 12-story building, to a nonspecialist the installation system seems unrealistic. The unit will "grow" from top to bottom. The construction workers will hang the first units of the boiler from strong center girders at the 74-meter level. In the process of installation they will acquire increasingly new assemblies and pipeline splices. [Text] [Moscow IZVESTIYA in Russian 30 May 79 p 1] 12151

KOSTROMA POWER STATION--Kostroma, 29 May--A total of 750 railroad platform cars was needed to supply from the manufacturing plants the equipment for a boiler at the Kostroma GRES [State Regional Electric Power Station]. Today the last components of that boiler for 1.2 million kw boiler-turbine unit have arrived at the assembly site. They will be assembled into larger combinations which will then be conveyed to the main building. Considering that the boiler weighs nearly 25,000 tons and is taller than a 12-story building, to a laymen the assembling procedure would seem unreal. The structure will grow from the top down. At the height of 74 meters, just below the roof, the builders will suspend the first parts of the boiler on superheavy-duty ridged beans. In the course of the assembly these parts will be joined to an increasing number of additional parts and tubing elements until the entire housing is suspended at the designed distance from the floor. This complicated operation has to be completed within less than a year. [Text] [Moscow PRAVDA in Russian 30 May 79 p 2] 1386

SOLAR HOUSE IN CHIRCHIK--Tashkent--A four-story apartment building errected in Chirchik, a new town of the republic, has been entirely converted to solar heating. The facade of this "solar house" designed by the republic's scientists and architects is made of glass panels covering solar batteries and heat-transmitting tubing. Scientists are conducting this experiment with the object of introducing solar power supply into mass housing construction. [Text] [Baku VYSHKA in Russian 1 Jun 79 p 1] 1386

POWER TRANSMISSION LINES--Vladivostok--Experts from the Far Eastern division of Energoset'proyekt Power Transmission Design Bureau have completed the work to develop the power transmission netowrk for the eastern sector of the Baykal-Amur Railroad whose builders are this summer completing one and half years ahead of schedule the construction of the sector running from Urgal to Komsomolsk-on-the Amur. Their project is currently used as a model for designing 220 kv power transmission lines and substations. The technical design of the Urgal-Berezovka Power Transmission Line has been drafted, and substations and lines at the taiga stations of Dipkiya, Goriya and Khorogochi are being designed. The personnel of the division have completed the blueprints for the power transmisson lines running from Zeyskaya Hydroelectric Power Station toward Khabarobsk. [Text] [Moscow IZVESTIYA in Russian 31 May 79 p 1] 1386

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